THE EFFECT OF DIGITAL TECHNOLOGY ON THE GREATER TORONTO AREA ANIMATION COMMUNITY

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Abstract

This is a multi-media thesis consisting of a written component and an ethnographic documentary film. The author is an insider who is both a professional animator and a teacher in the community being studied. It uses a discursive interdisciplinary approach and Constructivist Grounded Theory methodologies to examine the influence and effects of contemporary digital technology on animation production practices in the Greater Toronto Area Animation Community (GTAAC). It does not include a detailed critical analysis of any one animation related industry nor does it engage in extensive analysis of the worldwide practice of the medium. Rather, it is a confined analysis of the GTAAC as a microcosm. The data analysis and resulting conclusions focus on the emergent effects of the digital realities on the practices and the practitioners. In addition to providing professional and pedagogical applications the research also offers a better understanding of animation's pervasiveness within our culture. The inquiry into animation's ubiquitousness and proliferation of the emerging creative economy results in a proposed contemporary definition of animation, thereby adding to the ongoing discussion amongst animation scholars.

In appreciation of their loving patience and

tireless support of my scholarly pursuits,

I dedicate this work to

my wife Rose,

my son Luca,

and my daughter Liana.

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Chapter One

Introduction

Advances in digital technologies have significantly changed the creative and industrial practices of the animation medium. As a professional animator and teacher, I have often embraced and critically analyzed these changes from both perspectives in order to inform the medium and my practice more effectively. Animation Studies is a relatively new discipline of investigation that is in need of focused and critical dialogue. Sophisticated digital tools have transformed animation from a two dimensional restrictive medium where practitioners were forced to work within its limitations to a seemingly inexhaustible medium of untapped potential, clearly demonstrated by the use of contemporary digital applications for Computer Generated Animation (CGA).

Animation has historically proven its versatility and effectiveness in communication and cultural production through conventional applications such as entertainment, narrative cinema, advertising and education. Digital technology, like Computer Generated Imagery (CGI), has radically transformed the medium and its purpose.[1] Software tools such as Flash, Toon-Boom, Photoshop, Maya, and countless others have democratized the medium unleashing a flood of cultural content created by professionals to lay practitioners. Many of these are traditional animation artifacts like short films or juvenile humor but others are sharp social commentaries and activist film-making efforts. These new tools have motivated innovation and the use of animation in non-conventional functions, thereby creating a demand for animation practitioners as

[1] 1990s see films like *Toy Story* and *Jurassic Park to Shrek, Avatar, How to Train Your Dragon* and *Tangled* in the first decade of the 21st century.

peripheral participants in a multitude of industrial processes. Animation is the heart of the gaming industry and is increasingly relevant to disciplines like biomedicine, structural engineering, simulation processes, architecture, visual arts and for modeling theoretical structures like fractal mathematics and designs.

The collaborative interdisciplinary nature of animation allows its aesthetics to flourish in a diverse range of disciplines. The digital shift has amplified that ability and seems to have produced a more critical practitioner, the Animation Artist (AA), who is stimulated by the new technologies. As an artist/teacher within the Greater Toronto Area Animation Community (GTAAC)[2] I feel it is important and valuable to understand the phenomenon from the practitioners' perspectives – the artists in the trenches – and to understand how their 'real world'experience has been affected by the digital revolution of the last 20 years. This study, therefore, focuses on a whole animation community and its emergent peripheral activities within other fields.

1.1 Research Objectives

As I conducted my inquiry it became increasingly clear that what really mattered, within both industrial and pedagogical contexts, were the practitioners and the way the new technology affected their particular practice. It became apparent that the artists – the users of the medium and the building blocks of the community – would provide the most valuable data. These cultural producers offered deep insights into the emergent role of digital tools on the importance of animation to the moving image industry and cultural

[2]The GTAAC consists of the central city of Toronto and the following four surrounding regional municipalities: Durham, Halton, Peel and York. http://www.toronto.ca/torontomaps/index.htm

production in general. Thus, my intent with this research became to understand the phenomenon of digital technology within the context of an ethnographic study of a community of animation practitioners, the GTAAC.

One aim of the research is to discuss the technology's effect by identifying and analyzing a variety of contemporary animation production pipelines: 2D, CGI, stop motion, emergent, independent and hybrid pipelines. These, I would argue, are well represented in the GTAAC and, therefore, this community constitutes a legitimate representation of the larger global animation community. The case studies used discuss relevant and valuable production challenges, crisis, advantages and innovations related to the introduction of digital technology. However, it is not the intent of this thesis to discuss these pipelines in any great detail.

1.2 Significance of Study

It is hoped that the research provides important discussion points and theoretical generalizations valuable to both practitioners and scholars in their own disciplines, fields, and communities of practice. The study unpacks digital technology's role in the medium's current pervasive nature. It discusses its ability to offer a certain kind of contained artistic practice that supplies enormous possibilities for both single and collective creative efforts. It identifies traces of animation within other communities of practice (Lave & Wegner) and its contributions to contemporary cultural production[3] and the creative economy. It explores the medium as a socio-cultural and industrial phenomenon, a visual communication language that has surpassed its historical roots and

[3]Partly through analysis of production pipelines, interviews and case studies.

paradigm of two-dimensional cartoons and is now extensively used in industrial, scientific and artistic fields.

I expect this research will have theoretical and practical/functional significance that will make it valuable also to educators. I anticipate that by providing a foundation for critical analysis of existing animation curriculum it will inspire innovative animation pedagogy that will affect the future of the community.

1.3 Positionality

I am an active practitioner in the GTAAC with native knowledge of its culture and professional practices. My position as both 'participant' and 'interviewer' in the social group depicted is grounded by insider knowledge; therefore, my inquiry will be somewhat reflexive and auto-ethnographical.

Animation Studies has become more complex over the past decade or so, and the linking of theory and practice is a vital part of this evolution. As I began the fieldwork I quickly realized that a number of my identities and viewpoints were surfacing, namely: as a teacher, a practitioner, and as a scholar/researcher of animation, thereby establishing three critical lenses for my study. In her book *Method meets art: Arts-based research practice,* Patricia Leavy describes the role of an a/r/tographer and states that the acronym is a "metaphor for artist-researcher-teacher" (3). In this project I am an a/r/tographer: a researcher conducting an inquiry through two separate yet related lenses, that of the teacher and that of the practitioner.

1.4 Limitations

This thesis brings to light the GTAAC's dynamic relationship with digital technology and lays down a foundation for a more sustained study. It limits the inquiry to an accessible geographical area with a rich wide-ranging animation community (Fig. 1). It focuses on the experience of the community in the last fifteen to twenty years, as a microcosm, a community of practice consisting of individuals whose behavior and practices are typical of a larger social body. The fieldwork research attempts to include interviews with practitioners from a number of sectors of the community: the industrial/conventional sector, independent sector, emergent sector and educational sector.[4] I have also conducted interviews with informants from other communities: the United Kingdom (UK), the United States (US), Egypt, Singapore, Italy, France, Denmark, Ireland, Israel, Iran and China.

Even though I have insider knowledge and familiarity with the community, identifying key informants outside the conventional animation production boundaries that are both well informed and willing to be interviewed, has been challenging and somewhat elusive. Intellectual property and confidentiality clauses like those of the video game industry have presented some obstacles. Furthermore, because of production schedule demands some interviews with key management staff were also cancelled. However, I have had reasonable success conducting interviews with a number of international informants. Most of these were made possible through my attendance at the Society of Animation Studies Conferences and the Ottawa International Animation Film Festival

[4] See Appendix B.

between 2008 and 2011. In addition, my role as Industry Day Coordinator for the Sheridan Animation Programs generated a large number of interview opportunities with industry representatives from across North America (2008-2011). Guest speakers at Sheridan also agreed to be interviewed including: David Grove Surman (Pachinko Pictures), Ian W. Gouldstone (Indie), Maral Mohammadian (NFB), Steve Heckner (DreamWorks), and Matt Roberts (Disney).

The participants were selected by networking through my existing connections as an a-r-tographer. Most of them are first or second level of separation from me as interviewer so there is a slight bias on informants who engage in conventional industrial animation practices, which is the largest sector of the community. Therefore the project reveals insights and experiences that may be significantly influenced by these opinions.

My lack of experience as a documentary filmmaker presented some technical boundaries that limited cinematic expression (lighting, sound, and consistent video quality). Furthermore, booking professional equipment became an obstacle because of the need to respond to unscheduled interview opportunities. As a result, consumer quality personal equipment is used for most of the shooting and editing.[5]

1.5 Research Strategy

In my research I use an ethnographic, phenomenological, constructivist framework. My inquiry, investigative methodology, and analysis are driven by constructivist grounded theory (Fig. 2), which is often regarded as an *inductive* approach

[5]For shooting the video a Canon HD FS100 was used with a wired lapel microphone, Premiere Pro was used for editing.

Figure 1. Map of the Greater Toronto Area, http://mapsof.net/toronto/static-maps/png/greater-toronto-area-map.

but it can also involve *deductive* forms of inquiry and be comprised of both quantitative and qualitative data. I will focus on a third option that relies heavily on qualitative research methods, that of *abduction,*[6] which "relates an observation to theory (or vice versa), and results in an interpretation" (Dey 78). Dey explains that abduction "was conceived as a way of generating theory through research data rather than testing ideas formulated in advance of data collection and analysis" (79). Theory generation and refinement is stimulated through and grounded by empirical work which starts with observation, then theory generation, followed by more observations, then more theories and so on in a cyclical

[6]See Appendix C.

manner. It is a reverse engineering process where a hypothesis happens after the data collection.

I will be drawing on the reflective participatory process of action research to collect much of my data. The approach complements and helps to frame the project goal. The action research cycle of inquiry has been often described as an action leading to critical reflection and then perhaps to further action, for example within the context of curriculum reform. My intent is not to implement any action that would need further inquiry. Although my hope is that the research will lead to further critical reflection that will inspire practitioners and scholars to continue the action research cycle.

> The idea that practice can be the grounds for the generation of a new theory, which in turn feeds back into new practices, is at the heart of the living educational theories that practitioners generate as they study their practice and engage in questions of the kind, 'How do I improve my work?' (Whitehead 112)

Though the methodology for this study was clearly established at the outset of the project it was also understood that it would be a "'work in progress' rather than an abstract and ossified set of technical prescriptions" (Dey 74). This position falls in line with the authors of grounded theory Glaser and Strauss who "wrote *The Discovery of Grounded Theory* at a critical point in social science history" (Charmaz 509), and more importantly for this research, the constructivist approach to grounded theory discussed by Kathy Charmaz in the second edition of the *Handbook of Qualitative Research* (509-535).

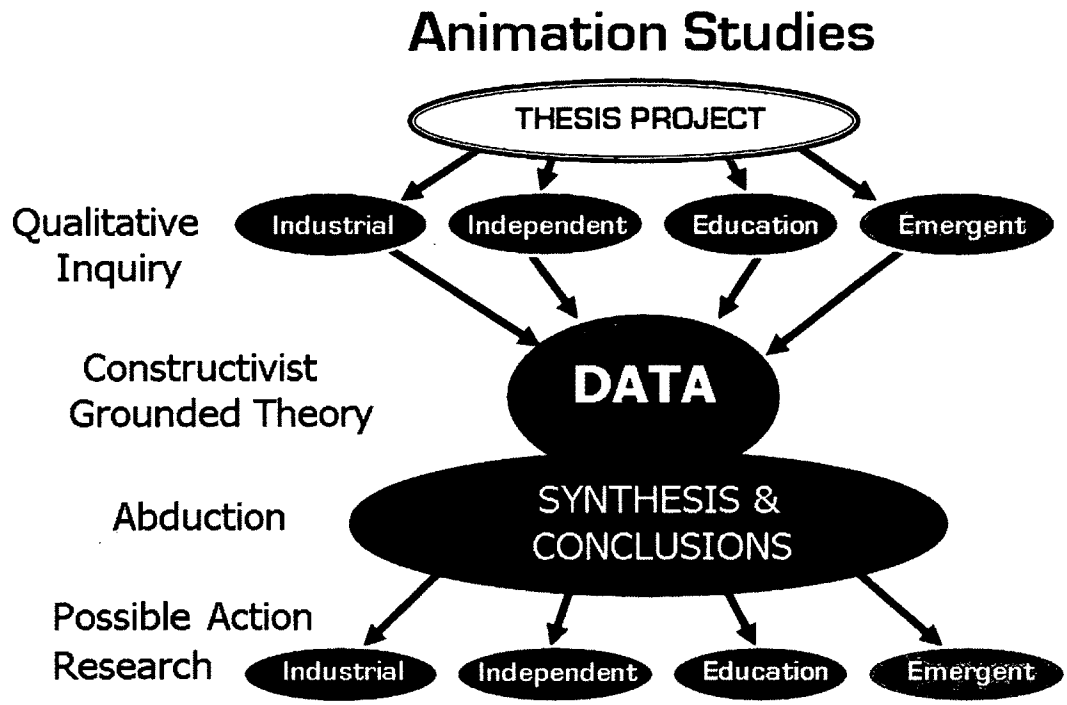

Figure 2. Inquiry Model.

1.6 Methodology

My research consists mostly of qualitative and some quantitative acquisition methods, with the bulk of the data collected through fieldwork and a variety of interview strategies: standard questions,[7] video, audio, found footage and archival material. Unstructured interviewing techniques, discussed by Andrea Fontana and James H. Frey in *The Interview: From Structured text to Negotiated Text* (645-671), and traditionally known as the "open-ended, ethnographic (in-depth) interview" (Fontana 652) maximize potential due to their qualitative nature and thereby provide a "greater breadth of data" (Fontana 652). The study uses oral history interviews, creative interviewing and a

[7]See Appendix A.

postmodern interviewing technique called *oralysis* where "the traditional product of interviewing, talk, is coupled with the visuals, providing, according to Ulmer (1989), a product consonant with a society that is dominated by the medium of television" (Fontana *657*) .

The interviews also follow an epistemic structure. In his paper, *"*Could Interviews Be Epistemic? An Alternative to Qualitative Opinion Polling*"*, Svend Brinkmann argues for epistemic interviewing based on the Socratic method. In this style of interviewing, the researcher is a participant rather than a spectator and opinions and beliefs are debated, tried, tested, and challenged in open conversation. Ultimately the emphasis is on open-ended resolutions, wherein the conversation or dialogue may be continued with future research rather than coming to fixed conclusions. My methodology has also been informed by approaches and insights discussed by Andrea Fontana and James Frey in their paper, *"*The Interview: From Neutral Stance to Political Involvement*"* where they discuss empathetic interviewing, the interview society, group interviewing, gender interviewing, new trends in interviewing and framing and interpreting interviews.

The focus on unstructured interviewing strategies and methodologies became more of a need than a want. There were times that I managed to stay in character as the professional interviewer but it became very difficult. While trying to answer my questions, many of the informants I initially interviewed would undoubtedly wander off into tangents that offered valuable insights. This created a need to have a flexible and pliable format. Generally, interviews would start structured and casually became Socratic

discussions between two individuals. The resultant data was then assessed, coded and eventually used to inform the editing of the documentary.

1.7 The Written Component

The written component forms the nucleus of the project and is meant to establish its structure and execution. It is inspired and informed by data acquired through fieldwork and interviews filtered through my personal experience. It borrows concepts and ideas from animation, pedagogy, ethnography and cultural studies literature and discusses them within the context of this study. A more in-depth description of these can be found in the literature review and their applicability demonstrated within the chapters of the thesis. Additional resources used are databases, books, journals, magazines, archival material and other texts including animated 'indie-films', installations, and architectural, engineering and biological visualizations,[8] all of which are analyzed through an interpretive phenomenological lens grounded in both theory and practice.

I have focused on the synthesis of the collective voices of my subjects rather than individual perspectives. Most of the informants are practitioners unified through the common experience of creating cultural artifacts using the medium of animation. This industrial mechanism uses an assembly line process that tends to secrete the significance of any single artist's contributions to the resultant cultural artifact, whether it is a film, gaming experience, or emergent application. This singular vantage point experienced by practitioners somewhat hinders their ability to critically articulate their role in negotiating

[8]Some examples are: Sheridan Visualization Design Institute (VDI), Sheridan Screen Industry Research & Training (SIRT), Computer Animation Studios of Ontario (CASO), and Animation Magazine.

the crisis and advances brought on by digital tools. I tried to be true to these authentic voices but I have also drawn significant subjective conclusions as an a-r-tographer. I used these viewpoints to add an analytic overlay voice tempered and guided by ethical considerations.

1.8 The Documentary

The documentary film is an important ethnographic study and an integral key component of my project. It is a document that supports the thesis but also retains a stand-alone significant purpose. It is the culmination and synthesis of the accumulated qualitative data acquired through the interviews but it does not identify, develop, or explain the underlying concepts and theories discussed in the written component though it does provide some of the grounding for them. It also illustrates my journey as a reflexive, inexperienced, documentarian faced with editing decisions that have hopefully represented my engagement with the community.

The decision to make the documentary film grew out of the desire to better understand my community by engaging its practitioners, their story, and the animation artist's journey. It was then shaped by my original research and my passion for documentary filmmaking,[9] followed by a sense of uncertainty as I settled into my role as the creative force behind the film project. My native knowledge and interview experience served as a great foundation for my documenting effort. I realize that the insider agent filmmaker is a position traditionally perceived as being too subjective but I feel the

[9] I have produced a 30 minute documentary, "One Day in the Life of a Studio" screened at the 2001 Ottawa International Animation Film Festival. In addition I have conducted many interviews with animation artists.

benefits have far outweighed the negatives. At a master class, Larry Weinstein, a documentary filmmaker and one of the founders of Rhombus Media, said – and I am paraphrasing – that he admires value, authenticity, and truthfulness, but these things are ultimately subjective. I have made a genuine attempt to document and present the truth as I understand it, authentically, with value and free of biases.

It is important to mention that my editing choices were influenced by the films supportive role within my thesis. Though as I journaled my observations and reviewed and coded my footage, I began to formulate connections between varieties of research material. The Activist Video course I took at York University and independent initiatives like the Society of Animation Studies (SAS) Conferences[10] I attended provided inspiring and thought provoking concepts that have influenced my filmmaking process. Coupled with my experience as a maker of animated films and an a-r-tographer the resulting documentary is a unique 'ethnographic statement' that breaks from traditional ethnographic protocol. Although generally ethnographic film is a disputed reliable source for serious anthropological studies I believe it offers undisputed research value. Paraphrasing Kaj Pindal referring to his work as a National Film Board animator, *it is what it is. I think it works!* (Pindal).

[10] I presented papers and interviewed scholars (Anderson, Furniss, Ghazala, Langer, Norris, Strom, Walsh, Ward, Wells,) and artists (daCosta, Gardner, Panagiotis,) at the 2009, 2010, 2011, SAS Conferences.

Chapter Two

Key Concepts, Theories and Practices

The intent of this chapter is to define essential key terms and affirm the source of important concepts, theories, and ideas underpinning my investigation. These were partly identified through the analysis of qualitative data derived from the coding of fieldwork research. This chapter also attempts to establish the framework for how these will inform the discussion of animation as a contemporary phenomenon.

2.1 Literature Review

I have made use of both theory and practice based literature including reference sources such as animation production texts and 'the making of' books published for animated feature films like *The Emperor's New Groove, Mulan, Monsters Inc., Up*, and many more. These served as peripheral inspiration and reference while my analysis of the data is informed by academic literature. I have drawn on the works of Animation Studies scholars like Paul Ward, Suzanne Buchan, Paul Wells, Alan Cholodenko and Maureen Furniss. Many of their ideas and theoretical concepts are embedded in my thesis introduction and form the core of my research. I will also make use of concepts such as 'critical practice' (Wayne 30), 'legitimate peripheral participation' (LPP) (Lave & Wenger 29), and questions of 'trainability' and 'recontextualization' (Bernstein 59). These concepts will be discussed in more detail in Chapter Four.

In his book *Understanding Media: The Extensions of Man,* McLuhan states that, "Under electric technology the entire business of man becomes learning and knowing" (58) and that "Every culture and every age has its favorite model of perception and knowledge

that it is inclined to prescribe for everybody and everything" (6). Computer animation is a product of the electric age and it is a medium that is fervently solidifying its place within the contemporary moving picture industry. Its true function has always been masked by its connection to simplistic entertaining cartoons, but in McLuhan's words, "The content or uses of such media [medium] are as diverse as they are ineffectual in shaping the form of human association. Indeed, it is only too typical that the "content" of any medium blinds us to the character of the medium" (9). Even in the case of CGA it is hard to escape the limiting paradigms that have been entrenched over decades of traditional animation production. I would like to apply McLuhan's idea of 'the medium is the message' to the medium of animation by referring to his example of the light bulb. "The electric light is pure information. It is a medium without a message, as it were, unless it is used to spell out some verbal ad or name. This fact, characteristic of all media, means that the "content" of any medium is always another medium" (8).

Following this logic any activity made possible by the electric light is in some way the content of it, since it could not exist in the dark. Similarly, the purpose and importance of CGA needs to be looked at as a light bulb. McLuhan's work on media has informed my arguments and inspired new thought about the substance and cultural importance of the animation medium as the light that gives life to our imagination. It allows us to imagine, project, and concretize our wants, desires, ideas, and concepts, for a world not yet a reality yet so virtually real that we can easily accept its existence. Through innovative narratives it addresses difficult issues of race, sexuality, and identity, which are subjects not always well represented in conventional live action. Through animation contemporary cinema, whether

it be fully CGA or a hybrid, offers today's audiences a convincing view of the future thereby forcing us to discern forthcoming consequences of our current actions. Films like *Wall-e* project a future full of overweight human beings unable to move while apocalyptic movies like *The Terminator* or *2012* demonstrate the fragility of the human race. Alternatively, the *Star Wars* films, the *Star Trek* TV series and even the *Avatar* movie have given us hope for the survival of an empathetic and resourceful mankind – a futuristic being exploring the uncharted universe through the empowerment of his technology while still remaining very human. Advances in digital animation have truly given humans the power 'to boldly go where no man has gone before' (Star Trek).

McLuhan's ideas on media as active metaphors with the power to translate experience into new forms speaks to the potential of the CGA medium as an extension of man's communicative and imaginative power. He discusses at length the idea of media as extensions of man:

> By putting our physical bodies inside our extended nervous systems, by means of electric media, we set up a dynamic by which all previous technologies that are mere extensions of hands and feet and teeth and bodily heat-controls all such extensions of our bodies, including cities will be translated into information systems (McLuhan 57).

These ideas of McLuhan regarding the extensions of man along with many more discussed in his 1964 book laid some of the groundwork for Katherine Hayles ideas on posthumanism. In her book *How We Became Posthuman,* she addresses many ontological issues. Hayles discusses what she calls the problem of disembodiment, the idea of the

cyborg as technological artifact and cultural icon, and the shift in conceptions of selfhood and subjectivity (1-7). This term, posthuman, has not been clearly defined but Hayles offers some clarity.

> It is important to recognize that the construction of the posthuman does not require a subject to be a literal cyborg. Whether or not interventions have been made on the body, new models of subjectivity emerging from such fields as cognitive science and artificial life imply that even a biologically unaltered Homo sapien counts as posthuman. The defining characteristics involve the construction of subjectivity, not the presence of non biological components (4).

In her book, Hayles begins by recounting the history of cybernetics and admits that "the construction of the tool as a prostheses points forward to the posthuman" (34). She goes on to say that "By the 1960's Marshall McLuhan was speculating about the transformation that media, understood as technological prostheses, were (media) effecting on human beings" (Hayles 34). McLuhan's ideas on 'medium is the message' and technology as an extension of man stimulate discussions on posthumanism and cybernetics that provide a powerful source for arguing the rise of a posthuman audience. These cybernetic relationships between humans and technology explore the contours of our own extended beings in our technologies and place CGA as a powerful extension of man's imagination and cognitive thought, which for McLuhan are the same thing. In order to better understand how the mediums digital tools have affected the animation practitioner it is important to identify and appreciate the posthuman consumers of media

and the synergistic, symbiotic relationship that exists between the three: medium, practitioner, and audience. Further query of these ideas and concepts may reveal the dynamic relationship between CGA and its role in shaping the 'posthuman audience', but this is beyond the scope of this thesis.

This idea of constructing subjectivity is what McLuhan may have been referring to when speaking about the power of media (3-6). He was interested in percept rather than concept. New technologies like the internet and the video game interface – which rely heavily on CGA – have given rise to a more diverse and sophisticated audience that perceives things differently. A fragmented audience of empowered users exposed to narratives that do not rely on traditional narrative structures but provide agent driven experiences. Examples of this are evident when playing video games and surfing the internet. Users interact with a technology that allows them to make choices, thereby creating a narrative that both satisfies and surprises – this point will be discussed more thoroughly later.

Contemporary digital technology has altered our desires with regard to what we want to spend our time experiencing and how we want to experience it, the worldwide web being the ultimate example. The audience of the future is the young audience of today. They like speed, interactivity, and control. They enjoy sharing their thoughts and ideas, producing content for anyone willing to watch. This production is partly facilitated by accessible animation tools like Flash or, in the case of Machinima films,[11] the appropriation of pre-existing game assets to make short films. This indie production

[11] The Halo 3game is used quite often. Its characters wear a full helmet which makes it easier to insert original dialogue.

phenomenon is clearly demonstrated by the huge database of personal and independent videos hosted by websites like YouTube or Vimeo. Users are uploading anything from personal videos to independent short films. Through this interactivity, that is simultaneously passive and active, users engage with the technology in a somewhat reflexive feedback loop.

Hayles states that "Reflexivity entered cybernetics primarily through discussions about the observer. By and large, first-wave cybernetics followed traditional scientific protocols in considering observers to be outside the system they observed. Yet cybernetics also had implications that subverted this premise" (9). She goes on to explain that this interaction/exchange between the observer/user and the technology is a symbiotic relationship where the user becomes 'part of the system being observed' (9). I would argue that this dynamic interaction has nurtured a distinctly posthuman sensibility that has altered audience perceptions and paradigms. With its capacity to satisfy the needs and desires of this posthuman-audience CGA is destined to be a powerful tool for emergent industries and production pipelines.

2.2 Production Models and Pipelines

Traditionally the core function of animation production models or pipelines[12] has been to facilitate the use of the medium and provide a structured workflow for industrial animation production practices. With the unrelenting proliferation of digital tools these practices have been in constant flux – partly due to the ongoing transition from traditional

[12]Production pipelines refer to the workflow of an animated product as it passes through its many phases of production. How will the project go 'from script to screen'?

to contemporary and emergent pipelines. In their book *Producing Animation,* Catherine Winder and Zahra Dowlatabadi break down the animation production process and discuss the various phases of production in great detail. This information was extensively used during the field work and data gathering phase of my project.

The GTAAC has a rich animation history that includes a great variety of narrative driven animation pipelines. These include: 2D traditional series production (Fig. 3), 2D digital series production, 3D (CGI) series production (Fig. 4), feature productions for both 2D and 3D, stop motion animation productions, commercial (advertising) productions, independent short film productions, gaming industry pipelines, hybrid pipelines and a significant number of emergent pipelines inspired by digital technology. In this thesis I acknowledge the ability of animation to assert a role within these pipelines, and it is increasingly obvious that the medium has outgrown its conventional applications. Its practices are being integrated in both cultural and industrial processes in new ways, though in some shape or form all driven by its narrative needs. So in addition tospeaking about the pipeline/workflow it is equally important to define the term 'narrative' and establish how I intend to use it within the context of this project.

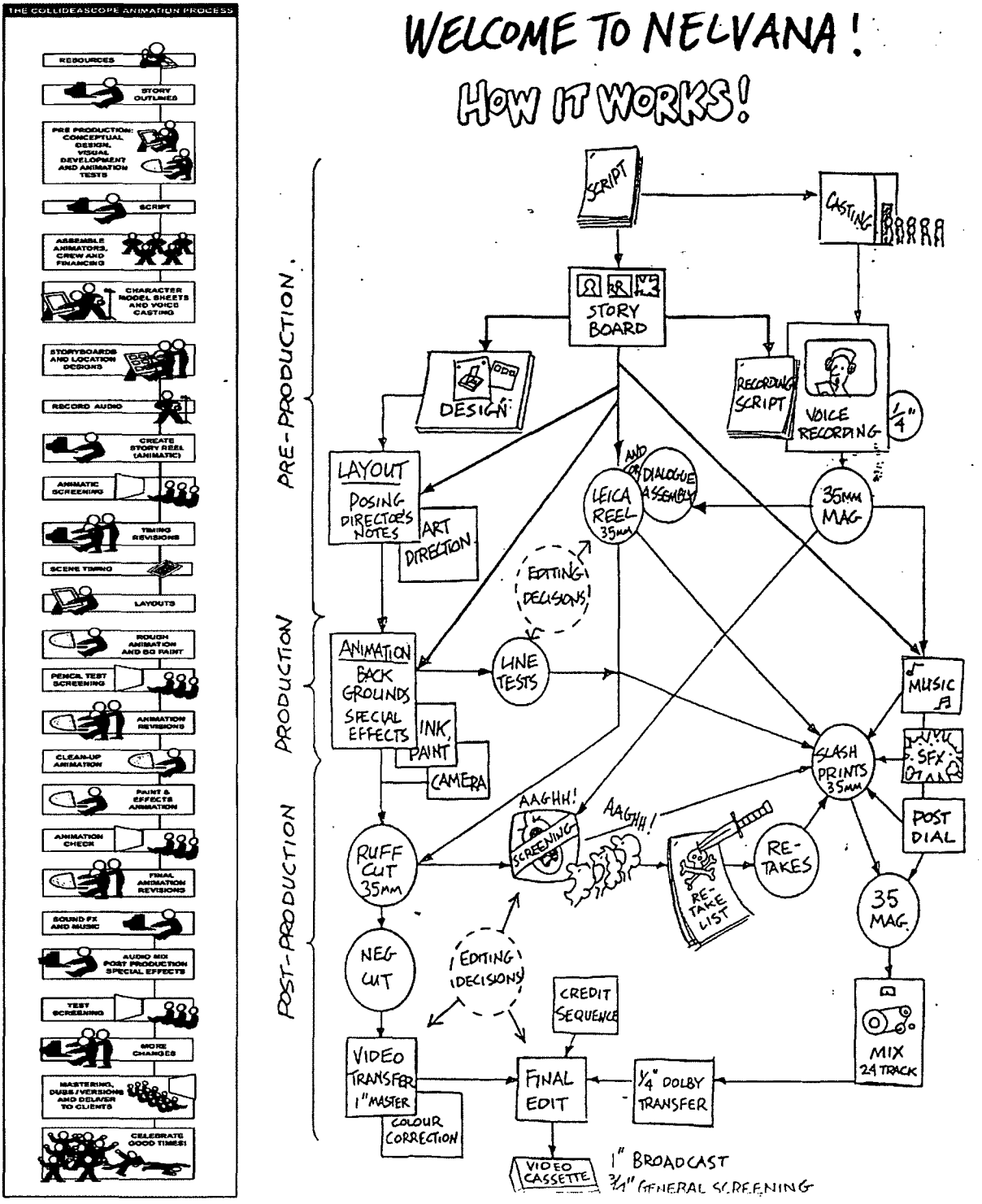

Figure 3. (left) Collideascope Animation Studio, series production pipeline circa 2007 (right) Nelvana animation studio, series production pipeline circa 1990.

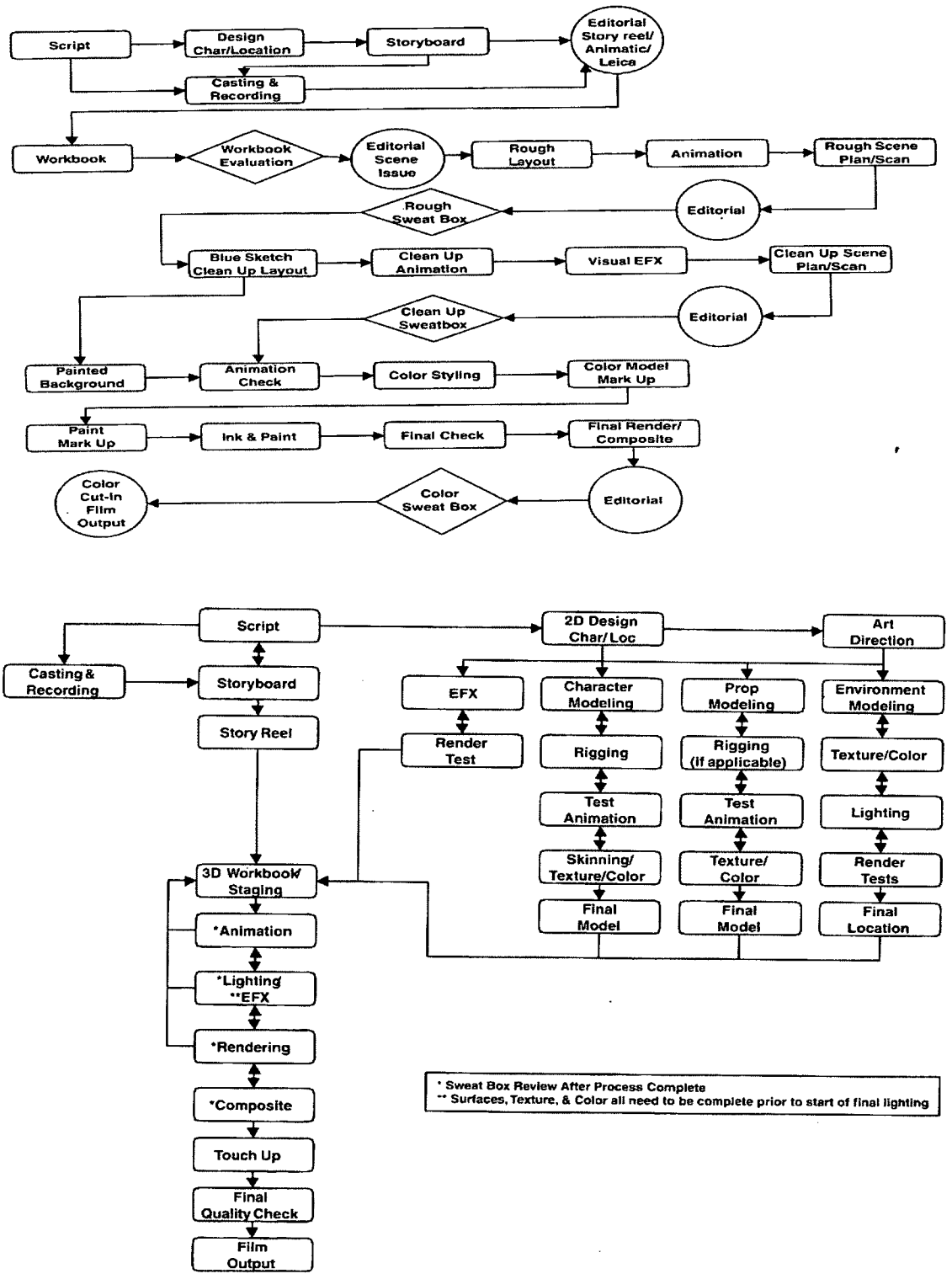

Figure 4. Winder and Dowlatabadi, 2D and 3D (CGI) production pipelines.

2.3 Narrative

In attempting to address animation's pervasiveness I found it difficult to classify and discuss its omnipresence in contemporary culture. I will therefore use the term 'narrative' as a means to talk about animation within many contexts.

Humans are narrative animals. As children we are taught and entertained by the telling of stories through oral, written or visual traditions. We generally associate narratives as stories told through a variety of art-forms: film, TV, theatre or literature, but the concept of narrative can be much more complex and evocative. A narrative does not have to be a single set of ideas, notions or perception as in the classical narrative structures of The Institutional Mode of Representation (IMR) adopted by Hollywood cinema (Cook 208). One could look at narrative structures as a "family resemblance concept, a cover term for a rich set of ideas" (Mateas and Sengers n.p.). It could be as John F. Meech describes narrative, "a form of contextualization, a framework in which a number of technical fields and philosophical approaches can be seen to be working together in a similar direction" (Mateas and Sengers n.p.). Jan Van Looy, in his article, "Virtual Recentering: Computer Games and Possible Worlds Theory", suggests that narrative (story) is a fundamental organizing principle of human experience.

As this experience changes, as in the case of the posthuman experience, the audience transforms. Therefore, the artifacts – within the context of this project that would be animation related – created to satisfy those audiences and the narrative structures and codes used to create them need to also change. In many cases this requires innovative production pipelines that facilitate the workflow of these new digital tools.

Cook states that the requirements of classical narrative structure "could conceivably be met by cinematic codes different from those of classic cinema" (215). They could borrow from video gaming codes which offer a rich interactive interface that engages the user by demanding his participation in the narrative, thereby creating emergent storylines. The gaming interface which is extensively used for entertainment, pre-viz, and virtual training is decidedly dependent on CGA. CGA has become indispensable to a number of industries including cinema, which has come to depend on CGA to forge the present-day narratives demanded by contemporary audiences. In his book *Understanding Animation,* Paul Wells suggests that,

> animation is a medium which makes available a multiplicity of styles and approaches in the telling of a story or the expression of particular thoughts and emotions ... animation possesses the capacity to create new modes of story-telling, often rejecting the notion of a plot with a beginning a middle and an end, in favor of symbolic or metaphoric effect (68).

In *How to Tell a Logical Story,* Michael Schroeder argues that "story can be seen as a sequence of logical argumentation, which often involves an attempt to resolve a conflict" (qtd. In Mateas, Serger n.p.). In contrast to this and other definitions of story Bringsjord and Ferrucci "state that the proper definition of story is that there is no simple definition. They believe that story is fundamentally undecidable" (qtd. In Mateas, Serger n.p.). Though that may be true, classic story narrative dictates that you cannot have a story without characters that are "represented as motivated by traits of personality or individual psychology" (Cook 209). The central characters that drive the story are usually

well developed protagonists (the main character) and antagonists (the conflicting force). These characters are driven by the laws of cause and effect and always have a 'character arch' that serves as a backbone to the story. The characters change and grow in order to overcome conflicts and obstacles that stand in the way of their goals. This is the classic understanding of what makes a story interesting. Yet, if this is true, how do we explain the contemporary attraction to narratives created within the virtual world of video games where the user assumes a role through his avatar and is actively engaged in directing his destiny, thereby creating a story and, by extension, an audience? How do we explain the relentless fascination and consumption of narratives created by the seemingly random viewing of subjective arbitrary content through video sharing websites like YouTube? The popularity of these websites may be due to the fact that they allow the agent to weave his own narrative according to specific needs, wants, and desires, dictated by both body and mind. So the answer to their popularity may lie in the ability of these two interfaces – gaming and internet – to empower the audience with control over time and space, speed, and delivery.

Because human beings are narrative creatures much effort is placed in the design and development of narrative frameworks (Van Looy). Mateas and Senger explain that "[if] humans often make sense of the world by assimilating it to narrative, then it makes sense to design our systems so as to allow people to use their well-honed narrative skills in interpreting these systems" (3). Whatever the context or discourse the audience explicitly looks for that sense of narrative and if it's not there they create their own. The future of narrative may lie in its flexibility to adapt to audience needs instantly, in real

time, by transcending classical narrative constructs, structures, and codes and embracing cubist, reflexive, and interactive approaches influenced by posthuman aesthetics. These ground-breaking narrative artifacts need a pliable plastic medium with infinite expressive power. CGA is well suited for this role.

2.4 Defining Animation

In order to discuss the animation medium it is important that I define what I mean by 'animation' within the context of this study and clarify how I would like to use the term 'animation artist'. When trying to identify active animation practitioners it was first necessary to determine whether an activity or task is an animation practice. To this end, defining animation simply by its classical roots presented a considerable obstacle so a new definition was necessary. In order to construct a contemporary definition of animation I considered existing definitions and borrowed from a number of concepts, ideas and professional opinions.

The ongoing debate and discussion about defining animation is may continue for a while still. This is mostly due to its chameleonic qualities and partly due to conflicting old and new paradigms that obstruct consensus. There are passionate discussions taking place amongst scholars and practitioners. In his book entitled *Understanding Animation,* Paul Wells addresses the question in a number of ways and offers this definition,

> To animate and the related words, animation, animated and animator all derive from the latin verb, animare, which means 'to give life to', and within the context of the animated film, this largely means the artificial creation of the illusion of movement in inanimate lines and forms. A

> working definition, therefore, of animation in practice, is that it is a film made frame-by-frame, providing an illusion of movement which has not been directly recorded in the conventional photographic sense (10).

For most of the 20th century the cold mechanical description 'frame-by-frame filmmaking' has contributed to the reduction of animation's impact while live action films, which work on the same principle, have enjoyed most of the success. Wells admits that this definition may not address the "kinds of animation that have been facilitated by new technologies" (10) such as the computer, though many of the old masters may agree with his definition. One of these is Kaj Pindal[13], a renowned National Film Board (NFB) animator who shared this very short and focused definition: "animation is drawings that move", and added, "that's the magic, the fact that drawings come to life".

McLuhan refers to this type of animation as cartoons and classifies it as a 'cold' medium. He suggests that it leaves much to the imagination thereby making it more interactive and inclusive (22-32). It may be that this is why there are a large number of audiences that still enjoy watching traditional 2D animation and why many companies are using 3D animation software to imitate 2D animation[14]. On the other hand, McLuhan would have surely classified pseudo-realistic CGA as a 'hot' medium – one that offers higher definition, a great amount of information and less interactivity – making animation a flexible, both a 'hot' and a 'cold' medium.

These are concepts that the renowned NFB animator, Norman McLaren, must have certainly known about. He did not live to see the advancement that computers

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[13] Kaj Pindal, is a veteran animator who has produced many great shorts for the NFB of Canada.
[14] Nerds Corp uses this technique extensively on shows like *Storm Hawks*.

brought to the medium, but his insight revealed one of the most celebrated and brilliant definitions that goes to the core of animation. Wells states, "it is useful to consider the view of Norman McLaren, one of the medium's acknowledged masters. [McLaren] says 'Animation is not the art of drawings that move, but rather the art of movements that are drawn. What happens between each frame is more important than what happens on each frame.'" (Wells 10).

One common descriptive of animation is the 'illusion of movement' or 'illusion of motion'. However this is also common to film which captures a moment of reality, of pre-existing life (actors, live action camera and lighting) twenty-four frames per second. It could be said that animation creates its own life and/or the illusion of life, and that would be true but so does puppetry. A great example of this is the work of The Jim Henson Company[15] and other companies like LAIKA (Portland, USA),[16]Aardman (London, UK) and Toronto based Cuppa Coffee,[17] use puppets in their stop motion animation which also uses miniature sets and props. These artifacts and others like drawings, pictures, designs, and paintings are essential to the animation process, but are the staples of other industries and communities of practice.

Most classically trained animation artists interviewed, especially the purists, speak of animation as a narrative/storytelling medium driven by strong characterization (Dave Quenelle, Willy Ashworth, Mark Mayerson, Kaj Pindal, Nancy Beiman, Maureen

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[15] Jim Henson is the founder of the company is the creator of *The Muppets,* www.muppets.com , and many memorable *Sesame Street* characters like Elmo, Big Bird, Ernie & Burt, Oscar the Grouch and more.
[16]LAIKA/house is a dynamic community of filmmakers, designers and animators guided by a legacy of 30 years of animation history and fueled by the vision of NIKE co-founder Phil Knight.
[17] Cuppa Coffee Studios is the largest full-service stop-motion facility in the world. It is based in Toronto and produces mostly series but is also developing features.

Shelleau). A common description offered by many of these artists including Brad Bird[18] is that animation is a caricature of reality (Sragow n.p.). Traditionally, when one speaks of animation one naturally thinks of the medium that gives life to a drawn or a digital (CGA) character, the actor that drives the story. I would argue that the intimation of 'motion' creates the illusion of life and each phase of animation production contributes to bringing a story – a narrative – to life. An example of this would be the animation of props or special effects which for the most part do not have any personality or emotion and like motion graphics that are not character based[19]. Environments created for animated works are also incredibly important to narratives on both an aesthetic and functional level. Animation designers are inspired by the mediums' innate potential to give life, to make the impossible possible. The creation of a digital three dimensional environment within which a virtual camera is made to simulate a specific moving point of view, as in an pre-visualization fly through[20], denotes 'synthetic motion', animation. The illusion produced by this synthetic motion is forged by a creator and denotes specific intent for atmospheric affect or to communicate a concept/narrative which is supported by imaginative intelligent design. In all instances the motion is purposeful. It is the fabrication of the illusion of motion. Bendazzi describes the essence of what animation is to cinema and other media by referring to it as a product of human cognitive thought. He says,

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[18]Brad Bird is a well-known director/animator whose movie credits includes *Iron Giant* and *The Incredibles.*

[19] Motion graphics refers to the animation of shapes and images for the graphic/advertising industry.

[20] Pre-visualization is used in many industries: film, architecture, real estate, tourism, education, and medicine.

> Contrary to live-action cinema, animation draws the elements of its future works from a raw material made exclusively of human ideas, those ideas that different animators have about things, living beings and their forms, movements and meanings. They represent these ideas through images they make with their own hands. In the causal concatenation of their images – a concatenation they conceive themselves – nothing can be left to chance...the repertoire of human ideas is inexhaustible (xxii).

Canadian talent is constantly recruited by American companies like Pixar Animation studios, DreamWorks, Industrial Light and Magic (ILM), Blue Sky, Sony Imageworks, and Disney. While interviewing Canadian CGI artists Dave Andrews and Steve Williams, two of the many 'top guns' recruited by ILM[21], author Karen Mazurkewich said that they jokingly compared themselves to the Almighty (276). Dave worked at ILM during the CGI phenomenon of the mid 90s and said, "animation is the fulfillment of the romantic dream as embodied in Victor Frankenstein" (qtd. in Mazurkewich 275). Steve adds, "God was given unlimited time to create new life. The animator is given about a year" (qtd. in Mazurkewich 275).

Through woven narratives CGA has the potential to fulfill the posthuman audiences'cravingsfor experiences that transcend reality, alternate realities. Summarizing Svankmajer's, Wells states "Animation can redefine the everyday, subvert our accepted notions of 'reality', and challenge the orthodox understanding and acceptance of our

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[21]Steve Williams, a graduate of Sheridan college helped to recruit a Canadian team for ILM, many of them former classmates including: Eric Armstrong, Geoff Campbell, Wade Howie, Phillip Alexy, Les Major, Robert Coleman, Dave Andrews, Jen Emberly, and Linda Bell, along with many Canadians that are still recruited every year.

existence" (11). Animation allows the manifestation of human imagination in a concrete and sensual way. Borrowing from McLuhan's ideas on media as the extension of man, I would suggest that animation is the quintessential extension of human imagination. Digital tools have removed all boundaries on its manifesting power. Hence, in an effort to acknowledge animation's classical roots, ubiquitousness, and boundless communicative potential I propose this definition: Animation is the cognitive fabrication of the illusion of motion as an extension of human imagination. This definition is intended to move away from the old paradigm of describing animation in technical or classical cinematic terms. It places a focus on the mediums potential as an emergent culture production phenomenon, thereby opening up further inquiry within the discourse of animation's proliferation and role within many narratives.

Chapter Three

The Greater Toronto Area Animation Community (GTAAC)

This chapter will provide a brief history of the GTAAC, a short description of its sectors, and the rise and development of the digital tools for animation production. The core concepts are informed by the decoded data derived from the views and opinions of the informants. These practitioners are the building blocks and binding force of the animation community. Many of them are employed on a contract basis and travel between companies, projects, and pipelines, thereby spreading the medium's influence to many narratives within the sectors.

3.1 History: The Roots of Computer Animation in the Greater Toronto Area

In her book *Cartoon Capers, The Adventures of Canadian Animators,* Karen Mazurkewich does a terrific job recounting the history and influence of Canadian companies and artists both at home and on the international animation stage. In her chapter "Digital Genesis" she writes about the numerous contributions that Canadian artists, educational institutions, and companies have made to the development of CGI animation. She states that "Canadians have played a major role in the evolution of digital imaging" (276). Canadians have convincingly displayed their ability to design notable valued software including: Alias, Softimage, Side Effects Software, Vertigo, ToonBoom and others.

Mazurkewich makes many references to the GTAAC, though she does not refer to it as such, and its important role in elevating the CGI medium to where it is today. It was this community that back in the early days of computers explored the potential for

respected emergent digital animation production. "Omnibus was one of the first companies to bring a computer animation program out of the academic closet and onto the commercial production stage" (Mazurkewich 278). In the 1980s Omnibus'[22] success was mainly due to designing logo tags for companies like the CBC, CTV, and Global while conducting intensive research into the medium's potential. At one point it "gobbled up two of its US rivals: Digital Productions, creators of *The Last Starfighter* and *2010* and the only production company with a Cray X—MP supercomputer; and Robert Abel & Associates, at the time considered one of the most creative commercial houses in the world" (Mazurkewich 280).

It is important to mention that according to Mazurkewich, high end computer animation software packages available today like Alias, Softimage, and Side Effects have 'built their temples' on the foundation laid down by the University of Waterloo in southern Ontario and the foreclosure of Omnibus in 1987. The "company's roster of 30 software and creative people [moved on to] new ventures, taking with them a wealth of experience" (281). There are countless mentions of key individuals from this community that migrated, and continue to do so, to the large U.S. animation studios. Marzurkewich explains the importance of Canadian professionals and Sheridan College graduates to companies like Pixar, ILM, Disney, Dreamworks, Sony, and even GM[23] (282). Not all Canadian animators deserted, however. Many stayed in Canada and formed core creative teams for companies like Nelvana, Animation House, Core, STARZ, Guru Studio, Elliott

[22] Omnibus was established in 1980 in Toronto by John Pennie, after the split of Image West a company he co-founded with Cliff Brown in California.

[23] GM scrapped their process of sketches and clay models in favour of the new CGI visualization method. Other major car manufactures soon followed suit.

Studio, Disney Toronto[24], and a multitude of small to medium-sized animation studios that contribute to both local and international productions. Though this community's rich talent provided so much to so many there is little history written about it. For this study it is not important to know its detailed history though I do believe it is an area needing further inquiry. My intent is to provide some oral history as recounted by the active community and contextualize the memories and accounts of the informants I interviewed so as to understand the community's current state and future potential.

Chris Robinson, an Ottawa-based author and artistic director of the Ottawa International Animation Festival, said of Toronto "I love it and hate it. Regardless I am forever connected with it...On one hand, I'm happy to go and see some good friends there. On the other, industry dominates, so there aren't many indie animators to speak with" (Robinson 167). I agree with Chris that industrial animation production rules in Toronto but what I discovered is that many of these practitioners are 'indie' at heart, which has resulted in more independent auteur driven work over the last few years. An important insight that I noted is how small the community is and the way its sectors overlap in synergistic ways. Though some artists admit that it could be better, everyone seems to know each other with many having cooperated on a project or two. The industrial sector and the educational institutions who try to cater to it are in very close correspondence, while the indie organizations tend to attract elements of both sectors by providing a forum where shared sensibilities are expressed and manifested. There is a

[24] Disney set up a studio in the mid 90's which closed after 5 years of operation.

definite unmistakable sense of unique identity and culture that is felt by all the sectors and participants in the study (ex. Nathon Gunn, and Frank Falcone, Madi Pillar).

3.2 Key Sectors of the Community

Many of the informants interviewed were either contacts I have made during my 22 years of professional experience in the animation industry or referrals from my contacts. Additionally, I interviewed members from organizations like Computer Animation Studios of Ontario (CASO), the National Film Board (NFB), Toronto Animated Image Society (TAIS), and faculty members and scholars from respected animation programs both in the GTA and internationally. For the sake of this study the GTAAC has been divided into four sectors: Industrial/Conventional Sector, Independent Sector, Emergent Sector and Education Sector (Fig. 6).

3.2.1 Industrial/Conventional Sector

Industrial animation production refers to any process or practice that is directlyrelated to anindustry, company or organization engaged in traditional television, feature and commercial productions. These include conventional production companies like Nelvana, Pipeline Studios, Nine Story, Guru Studio, Nerds Corp, Fresh Animation, Elliott Studios, CORE, Cuppa Coffee, STARZ, Cookie Jar Entertainment[25] and independent professionals working within that sector of the community. It is well accepted by many in the GTAAC that the GTA continues to be a training ground for practitioners that ultimately end up working both nationally and internationally, many for

[25] Many of the companies are represented in the documentary by key principals. A more complete list of GTAAC companies is available as an appendix.

the large U.S. production houses. Nelvana, one of the few companies that has survived over the years, is a prime example of this 'training' phenomenon.

The community's talent has attracted many companies to set up shop in the GTA. In the 90s Disney opened up a studio that did some amazing work for a few years and then closed down in 1998 leaving many local talent disappointed and angry. The latest company to do the same was Starz Animation who stayed active for a few years and managed to bring some terrific projects into town like *9* and *Gnomeo and Juliet,* but it unfortunately closed its doors in 2011. In this case the company was sold to Canadians who retained the studio intact under the new name, Arc Studios.

3.2 Independent Sector

I like to consider myself part of this sector though as an animation artist most of my creative potential has been directed toward making a living within industrial production. I struggle when trying to categorize this group because these are sensibilities shared by many of the practitioners. My perception is that most animation artists see themselves as independents driven by the desire to create personal unique work but are forced to work within industrial models. This is certainly true for many of the filmmakers interviewed for the thesis documentary. Jonathan Ng, Mike Weiss and the painters 11 (TAIS) exhibition [26] are great examples of artists who struggle between financing their own films and the need to pay the bills. Willy Ashworth, an 'old timer' in the community who recently completed a film that had been in the works for over 15 years, serves as

[26]TAIS Painters 11 Exhibition 2009

inspiration to the rest of us. His film *Weenie Wagon* won first prize at the (TAIS) Animation Showcase Event in June 2010 – a very emotional and fulfilling moment.

Organizations like the NFB, LIFT[27] and TAIS (independent production focus), CASO (industrial production focus) and smaller efforts like the Naked Frames Festival, super8porter[28] Toronto Short Film Project[29] and other independent initiatives are extensions of government interests in promoting the arts and the use of old and new technology. These organizations have the potential and are positioned to act as galvanizing forces for the whole community by offering events and venues where all sectors of the community can congregate, meet, mingle and network.

3.2.1 Emergent Sector

Emergent refers to animation production that is outside of conventional television and feature production. The gaming, motion graphics, web based content, interactive and pre-visualization industries are some examples of emergent applications. Another popular application of the medium is 'augmented reality' – the use of animation to enhance reality and communicate hidden inner-workings or peripheral information to users and audiences. The projection of game explanation, virtual ads, statistics and strategies on to the football field during a live game is a good example of this. Augmented reality offers a link between the conventional narrative use of the medium and that of a powerful communication tool. Animation houses and freelance professionals are peripherally engaging these and other industries by providing expertise within their established

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[27] Liaison of Independent Filmmakers of Toronto, http://lift.ca/.
[28] http://www.super8porter.ca/Links.htm
[29] http://www.torontoshortfilmproject.com/home.html

pipelines and/or by producing animated content to supplement their product. Companies like Ganz, Fisher Price and Spinmaster are good examples of these initiatives.

3.2.2 Education Sector

The popularity of computer animation has sparked a growth in the number of educational institutions offering animation programs. In addition to Sheridan College which has an international reputation as one of the best animation schools, Seneca College, Centennial College, Humber College, George Brown College, Ryerson Institute, and the Ontario College of Art & Design have also developed multimedia or motion graphics curriculum that teaches animation as either a core or secondary course. There are also many private programs that have started and stopped over the last decade or so. Many of these placed a heavy focus on software education – the new animation digital tools. A major complaint from companies looking to hire these graduates is that the students may know quite a bit about the software but are weak in classical animation principles. Most GTA institutions have acknowledged this concern and have made a deliberate effort to design curriculum that addresses a good blend of both classical and contemporary skill-sets. Animation talent needs quite a bit of time to develop and many of the programs are simply too short to teach both the traditional skills and the new technologies. These time constraints forces institutions to choose carefully the balance between the two and the rest is left to the will and desire of the student. The newcomer to the industry has a lot more to learn after graduation. This is achieved through the concept of situated learning which has always been a very important part of the GTAAC growth and will be discussed in the next chapter.

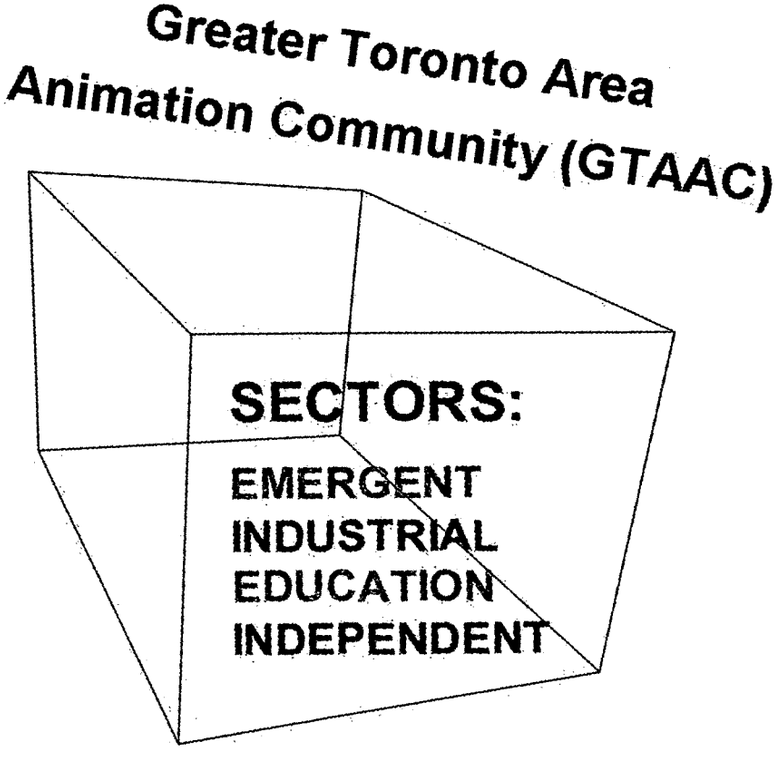

Figure 5. Greater Toronto Area Animation Community (GTAAC).

Chapter Four

Examining the Effects of Digital Technology in the GTAAC

This chapter focuses on how the artists/practitioners' needs, desires and artistic visions are facilitated and inspired by the ground-breaking opportunities generated by the digital tools and how these tools may dictate the medium's future. It also discusses how the community has mediated the challenges and crisis created by the new technology.

I chose the industrial sector, specifically animation production for television, for a case study because it is the most active sector of this vibrant community. As I reflected on my own career in the industry, I recalled discussions with other professionals about issues and concerns that directly affected us. Looking back to the 90s I realize that there were many astute observations made and debated around coffee tables and workstations. Through these personal recollections and interviews conducted I have attempted to re-discover and discuss some of the key issues and concepts at work during the digital shift transition period identified in this thesis.

Principles that apply to other sectors of the community – independence, emergence, and education – may hold the key to nurturing the GTAA community's promising digi-centric future. Such a promising future rests with the community's ability to embrace emerging technology in a unique and innovative manner and from my perspective it needs to be discussed within the community's pedagogic discourse. For this reason I have also chosen to use the Sheridan College animation program for a case study. The full effects of digital technology on the GTAAC are beyond the scope of this thesis and will need further inquiry.

4.1 Industrial Sector: Challenge & Crisis, Synergy & Innovation

Since the beginning of the 1950s artists have been producing animated television (TV) series by employing the time-honored skills of drawing with pencil on paper and painting using brush and paint. Production practices did not change much until the 1990s with the introduction of digital imagery or, as one animator put it, "pictures that don't really exist". The new digital technology caused unparalleled alterations to the traditional 2D[30] animation production models. The introduction and mitigationof the digital knowledgeand applications created a crisis that forced change in the GTAACwhich in turn inspired innovation.

Starting in the early 1990s digital tools revolutionized animation production pipelines, especially television series production. Their effects, including benefits, were mostly felt in production – ink and paint[31], background painting, compositing[32], and editing. Computer generated animation (3D animation) was also being considered for series productions along with a multitude of hybrid options. Software such as Macromedia Flash[33] offered unprecedented innovations that gave birth to new and dynamic 2D animation production pipelines. It leveled the playing field blurring the traditional line between 'newcomer' (junior artists) and 'old timers' (senior artists) and consequently altered power structures within the creative teams. This chapter will focus on the concept of 'legitimate peripheral participation' (LPP) defined by Lave and Wegner

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[30] 2D animation is produced through the use of flat two dimensional art like a drawing or a painting.
[31] The process whereby final clean animation is scanned and painted (made ready for compositing).
[32] The process whereby final color scene elements (background, animation, overlays, underlays) are composited (merged) resulting in a final single video file that will then be edited into a final film.
[33] Macromedia Flash was software originally used by motion graphics artists and web developers to create animated web content. It was adopted by TV series animation producers in the mid 1990s.

in their book *Situated Learning: Legitimate Peripheral Participation* and discussed by Paul Ward in his paper, *"Some Thoughts on Practice-Theory Relationships in Animation Studies"* (230-234). It will also draw from Basil Bernstein's text *Pedagogy, Symbolic Control and Identity* where he discusses issues of 'trainability' and 'recontextualization'. I will use his ideas in an attempt to contextualize the body of field research[34] I have conducted and discuss some key aspects of my thesis. In order to achieve this I aim to describe and evaluate the experience – as both a researcher and an artist working for Nelvana animation studio – of traditional animated television (TV) productions in Toronto Canada between 1994 and 2004.

For decades the animation industry produced thousands of hours of cartoons using traditional 2D production models. The conventional 'script to screen' production pipeline involved the linear execution of very specific production phases organized in an almost assembly line approach. This is perfectly understandable given the fact that animation is a very labor-intensive process that requires relentless commitment and large teams of artists. The traditional pipeline, which can be compared to a car assembly line, was refined and perfected by one of Canada's most influential and successful animation production companies, Nelvana. In a book entitled *The Nelvana Story – Thirty Animated Years,* Daniel Stoffman depicts a company that succeeded in creating quality animated products through struggle, determination and innovation. Stoffman depicts the Toronto based Nelvana as the second largest exporter of animation in the world in 1995, having created memorable animated TV series and features like: the *Care Bears*, *Franklin the*

[34]Most of my data was collected through a series of interviews conducted with industry professionals.

Turtle, Tin-Tin, Pippi Longstocking, The Magic School Bus, Rolie Polie Olie, Rupert the Bear, Bob and Margaret, Babar, Little Bear and more. During my fourteen years (1987-2001) with Nelvana I contributed to many of these series and witnessed its impressive growth first hand.

My interest in legitimate peripheral participation is based on my own experience. Looking back at my career in animation, including the last ten years as a faculty member of the Sheridan Institute of Technology and Advanced Learning BAA Animation Program, I realize that legitimate peripheral participation played a vital role in my integration and survival within the animation community. In 1987 I was a young art student looking for work and I heard that Nelvana was hiring. The company was looking for would-be animation artists that demonstrated potential. Most of the hires were graduates of the Sheridan College Animation Program. Some are still working there today. I was an Ontario College of Art graduate with a background in fine art, illustration and graphic design but with very little animation experience. The position available was 'layout artist', a very specific and important role within the animation production pipeline. The job demanded careful planning and execution of drawings by integrating visual information from designs and storyboard panels, thereby essentially creating the blueprint for the rest of the extensive animation process. In order to compete for the job I was asked to do a 'layout' test. The test consisted of ninety percent drawing ability and ten percent technical knowledge. I had all the necessary drawing skills but soon realized that there was more to the test than I first assumed. Some of the essential tools of the trade like the field guides were foreign to me and I wasn't entirely sure how to use them.

Feeling a bit overwhelmed, I decided to walk around and talk to other artists. I did not know it at the time but that was a decision that would have a dramatic effect on the direction of my career. I was able to strike a friendship with a couple of senior layout artists who were willing to look at my work in progress and give me some advice as to the technical aspect of the job including the use of the field guides, which are used to frame the artwork thus simulating the TV screen. I was hired and these same seniors became my mentors and teachers as I learned to adapt and recontextualize my skills and knowledge within the animation industry. Looking back at that learning experience, I realize it was a great example of 'situated learning' and its defining concept 'legitimate peripheral participation'. This concept is how Nelvana and many of the other studios operating in the Greater Toronto Area (GTA) managed to keep producing animation and survive the decades of technological change and uncertainty. Lave and Wenger describe LPP this way,

> Legitimate peripheral participation provides a way to speak about the relations between newcomers and old-timers, and about activities, identities, artifacts and communities of knowledge and practice. It concerns the process by which newcomers become part of the community of practice. A person's intentions to learn are engaged and the meaning of learning is configured through the process of becoming a full participant in a socio-cultural practice (29).

The animation industry is a community of practice whose progress has depended on legitimate peripheral participation. Nelvana's vice-president of production Patricia

Burns gives credit to the senior artists referring to them as "the anchor people. They know the history. They are the ones you can go to when you are bringing in new people, when you need answers to problems. We have them in all departments" (Stoffman 124). As a result of the support from these senior artists young animators get a sound footing when entering the industry and become productive members of the animation community as a whole.

In the eighties and early nineties, Nelvana hired a good number of 'fine artists'[35] who became passionate about the art of animation. This passion was essential within a situated learning environment, but even more vital was the "preparedness and flexibility of the learner" (Lave & Wenger 21). The ability to be trained or 'trainability' as Bernstein termed it (59) would prove to be the artists' strongest asset. Through legitimate peripheral participation, they were able to 'recontextualize' their traditional art skills, thereby achieving a high level of competence as artists in the animation industry. Many fine artists[36] (Chadwick, Hitchcox, and Caswell) took on painting and drawing positions in a variety of Nelvana's departments: design, layout, storyboarding, and background painting. After a few years some, like me, were asked to take on roles as supervisors and directors. These positions were acquired through peripheral participation, by being fully engaged in doing the work and learning from the old timers. Junior artists build relationships with senior artists who were willing to share their wisdom and knowledge. Production management staff actively promoted and facilitated these learning

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[35] These were artists, many from the Ontario College of Art, with a fine arts background in painting and drawing.

[36] The data used is taken from both personal memory of artists I have worked with (Clive Powsey, John Vanbruggen, Rudy Stussi) and interviews with fine artists still working in the animation industry.

opportunities in order to develop healthy, positive, productive, synergistic departments. Lave and Wenger argue that,

> legitimate peripheral participation is not in itself an educational form, much less a pedagogical strategy or teaching technique. It is an analytical viewpoint on learning, a way of understanding learning... learning through legitimate peripheral participation takes place no matter which education form provides a context for learning, or whether there is any intentional educational form at all. Indeed, this viewpoint makes a fundamental distinction between learning and intentional instruction (40).

The industry has changed its tools but the heart of the community is still the 'full participation' of the artists and their dynamic relationships with the medium and with each other (Fig. 6). Lave and Wenger use this term full participation "to do justice to the diversity of relations involved in varying forms of community membership" (37). The newcomer's participation in the community is not limited but rather open-ended whereby "peripherality, when it is enabled suggests an opening, a way of gaining access to sources for understanding through growing involvement" (37).

Most post secondary animation programs do a competent job at preparing their students for the industry but the learning does not stop there. In their book *Producing Animation,* Winder and Dowlatabadi discuss the very important idea of industry internal training and refer to classes being led by "in-house talent and outside animation pros" and creating workshops where artists can "hone their artistic skills" and "staff can cross-train

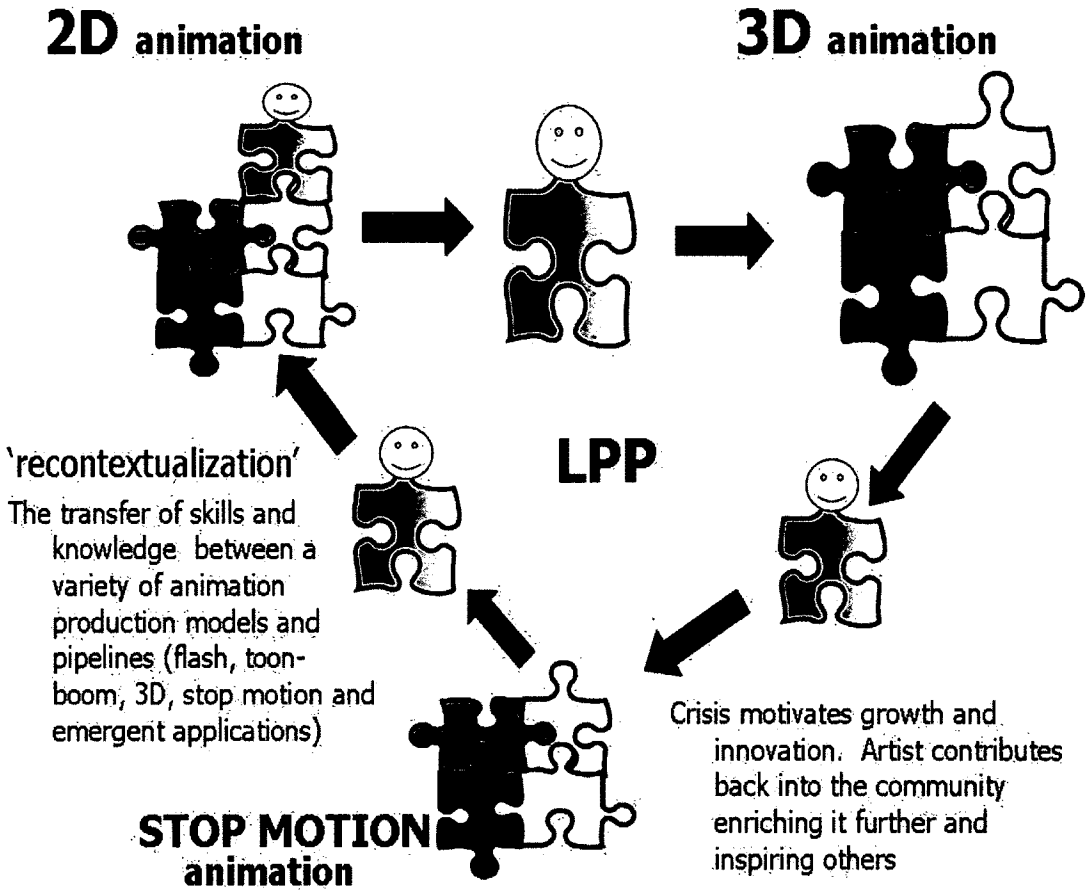

Figure 6. Traditional Industrial productions models and the role of LPP in the GTAAC.

and learn about what other team members do" (90). These opportunities, whether structured or unstructured, seemed to have provided many graduates with important learning experiences that contributed to their success. It is obvious why industry representatives[37] often suggest that one of the most important abilities for newcomers has always been 'trainability' especially in today's dynamic fast paced industry when artists

[37]Animation industry recruiters and company representatives from feature and TV productions.

are constantly challenged to recontextualize their skills to meet new demands.[38] Bernstein describes it this way,

> where a skill, task, area of work, undergoes continuous development, disappearance or replacement; where life experience cannot be based on stable expectations of the future and one's location in it. Under these circumstances it is considered that a vital new ability must be developed: 'trainability', the ability to profit from continuous pedagogic re-formation and scope with the new requirements of 'work' and 'life' (59).

This concept of trainability is a key component of the classical relationship between mentor and student, master and apprentice, or in the case of animation studies and this thesis between senior artists, 'old timers' and junior artists, 'newcomers'. These relationships position legitimate peripherality as a complex notion "implicated in social structures involving relations of power" (Lave & Wenger 36). Traditionally, in 2D animation productions the juniors came into a project and learned from the seniors. Some of these relationships were in the form of assistantships like the junior animators assisting the senior animators by cleaning up their drawings. They might do this for a few years before finally getting a chance to animate their own sequence of a film. The junior storyboard artists had similar relationships with their seniors. In other cases, like the design and layout departments, junior artists would be given easier creative tasks until they were capable of handling more difficult work. Junior designers would be asked to

[38] These insights into the hiring practices of new artists were acquired in my role as co-ordinator of a graduate event that brings industry and young animation prospects together in the shared goal of solidifying a working relationship, as employer and employee.

design props, secondary characters, or minor locations while junior layout artists would be given less complex smaller sections of the film to work on – all supervised/mentored by seniors. In some cases newcomers would take less artistic peripheral jobs like inking or colorizing the animation or even photocopying duties, just to get their proverbial 'foot in the door'. These structures have existed for decades and have a hierarchy, a sense of respect and appreciation for the old timers' artistic expertise and mastery of the mediums' potential as a storytelling device.The tools and their function carried less importance.

Digital tools like Flash democratized access to the animation jobs and in many cases the industry was willing to hire newcomers whose key ability, and perceived advantage, was knowledge of the software. They entered the animation industry from diverse disciplines like motion graphics and multimedia and from institutions that emphasized teaching of animation software at the expense of traditional skills training. This generated some resentment from seasoned old timers and ultimately was not conducive to building creative, effective, digitally driven animation production teams.

The interviews conducted suggest that the industry experience during this technology shift was diverse – both exciting and somewhat disruptive and taxing – on the animation artists who recount the initial stages as positive but mostly negative. During this time Nelvana was at its busiest, landing major broadcasting deals with American Networks like Nick Jr. (Nickelodeon) in 1995 and CBS in 1998 with shows like *Franklin, Anatole, Dumb Bunnies, Flying Rhino Junior High, Mythic Warriors,* and *Tales From the Crypt Keeper*. Experienced senior artists were successfully generating traditional 2D artwork for dozens of shows a year. Suddenly, or at least that was the perception, there

was a new reality[39], computer enhanced animation productions. Winder and Dowlatabadi state that,

> computers have altered the landscape of Animation in two distinctly different arenas: 1)the use of Computer Generated Imagery (CGI or CG), a form of animation that enables the artist to draw 3D images using the computer, and 2)the use of the computer as a tool in the 2D production process often referred to as Digital Technology" (12).

Many artists struggled to accept the 'pencil to pixel' paradigm shift partially due to the initial aesthetic limitations of the new technology. It was widely acknowledged by most professionals in the industry that the software and hardware did not yet offer a satisfactory replacement to the traditional tools they had mastered. This was both a technology issue and one of recontextualization. In his paper "Some thoughts on Practice-Theory relationships in Animation Studies" Ward states,

> The concept of recontextualization as outlined by Bernstein can be usefully compared with that of 'remediation' (Bolter and Grusin, 1999). This latter term is proposed as a way to understand what happens when new media emerge, with Bolter and Grusin arguing that, far from media simply replacing existing media forms, what happens is that the new refashions the old. The different media enter into a relationship of co-existence characterized by the interrelated logic of immediacy and hypermediacy (243).

[39] This was a common issue brought up in many of the interviews of professionals like Enzo Avolio, Dave Carson, Glenn Chadwick and Michael Hitchcox.

The artists would need some time to implement 'the relationship of coexistence' that Ward references and to mediate a means to 'refashion the old' with the new, while simultaneously reinventing and accepting their roles.

Winder and Dowlatabadi argue that "A common misconception is the belief that the use of computer hardware and software enables an artist to just press a few buttons and – presto – the drawings are done. This is not the case although there are instances in which computers can make the life of an artist a little easier" (12). In the case of Nelvana, digital technology crept in through the music department and later on its post-production in the late 1980s – areas that the average artist would not have easily been exposed to nor affected by. Between 1990 and 1998 there were three specific production models introduced by Nelvana, confirming that the digital tools were here to stay.

The first supplemented the existing 2D animation pipeline (Fig. 7), the second was 3D animation (Fig. 8), an entirely new pipeline, and the third replaced the old 2D pipeline. It became apparent that productions were changing and the question on everyone's mind was "Where will I fit in these new digitally driven production pipelines?"[40] First, Nelvana introduced digital software like Animo for 'ink & paint' and 'compositing', which was a welcomed addition to the traditional 2D production pipeline. Scott Dyer, CEO of Nelvana explained, "We did that because it was much more efficient and resulted in a better product" (Stoffman 95). Second, the company established a 3D animation department about which Scott says, "[it is] sort of in between animation and live action...I don't think it's ever going to replace anything" (qtd. in Stoffman 96).

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[40]Interview with Willy Ashworth - 30 years of experience as an animator, director. This sentiment was also shared by other contributors: Joe Sherman, Glenn Chadwick, Scott Caple, Enzo Avolio, James Caswell.

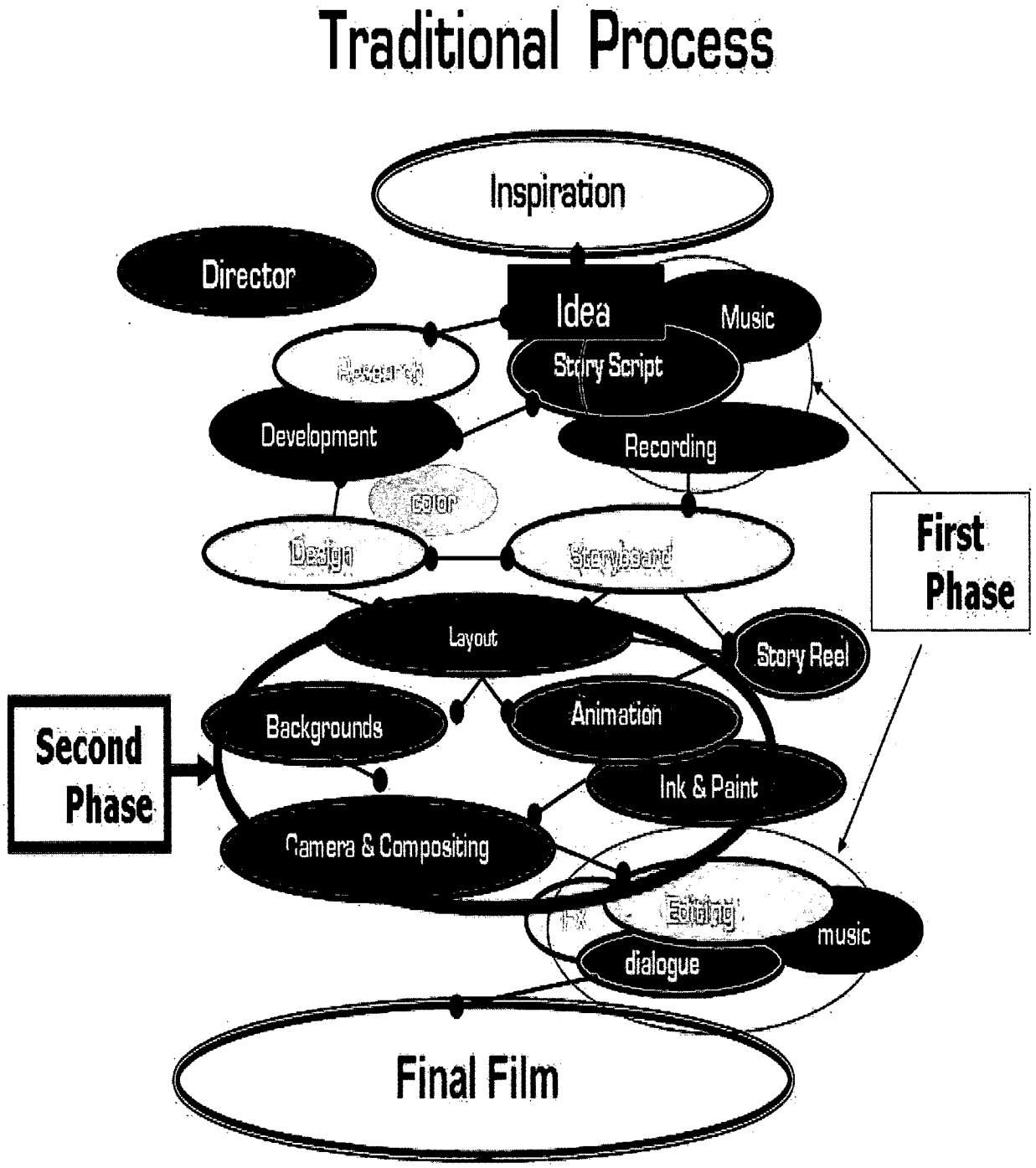

Figure 7. First and second phase of digital change.

Scott's observation was a very insightful and has proven to be true. With mega hits like *Toy Story*, *Shrek* and *How to Train Your Dragon,* 3D animation has made its mark independently of other media. When it was first introduced as an emergent production process it created an 'us' and 'them' mentality amongst artists which still lingers today. To most of the artists engaged in traditional 2D productions, the 3D (CGI) production was a foreign entity that settled next door and demanded a disproportionate amount of respect. There was a generous amount of resistance toward the awkward looking 'new kid on the block'.[41] Water cooler discussions among traditional 2D artists focused on the restrictive and limited nature of 3D software. They noted some benefits but the general consensus was that it could never capture the performance that a traditional animator is capable of generating on paper.[42] For a while they were right, but as time passed it was soon acknowledged that it was possible to create an entertaining TV series with these new digital tools. Successes like *Reboot*[43] gave this new medium credibility, and shows like Nelvana's*RoliePolieOlie* (1988) won the hearts of audiences in over 100 countries with Entertainment Weekly calling it "the best new children's show" (Stoffman 83).

Although 3D animation was the identifiable new digital medium and accounted for some of the series animation produced in the GTA, it was Macromedia Flash that had the most influence on Toronto's traditional 2-D TV productions. This innovative digital tool, originally popular for motion graphics and web-design, caused unprecedented

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[41] Interview with Glenn Chadwick – layout artist, designer, background artist (1986 to present).
[42] Interview with Maureen Shelleau – animator, designer, assistant director (1984 to present).
[43] Produced by computer based Maynframe Entertainment from 1994 and 2001.

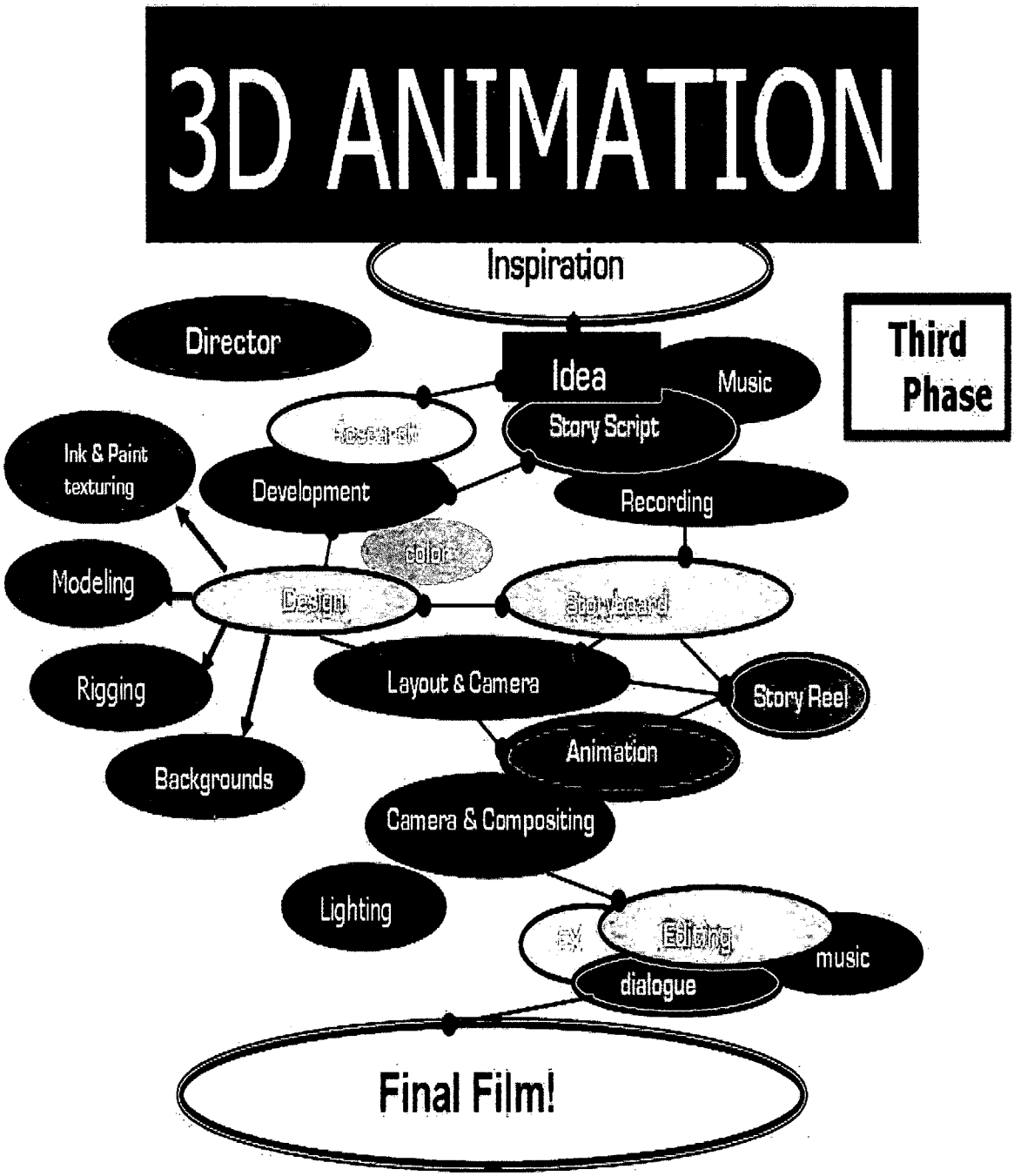

Figure 8. Third phase of digital change, 3D (CG) animation.

changes to the series production industry during the mid to late 1990s – and continues to thrive today as an Adobe product. This digital production alternative became very attractive to animation producers who were trying to find inexpensive processes to accommodate shrinking income opportunities.

Stoffman explains that in 1997 CBS' ratings for children's programming were falling so "the license fees CBS could pay to a third party also kept falling" (87). The cost of producing animation though was still the same. Winder and Dowlatabadi affirm that "A television series, depending on the number of episodes produced and the complexity of animation, has a very broad budget range. A low-budget show can start at $250,000 US per episode, while higher end shows such as a prime time show like the Simpsons can reach over 1.5 million dollars" (17).

Financial challenges were amplified by the popularization of Japanese limited animation and later by shows like 'King of the Hill' discussed by Maureen Furniss in her book *Art in Motion, Animation Aesthetics*. Limited animation requires less effort due to the restricted number of drawings—sometimes just a few—it requires per second of film, as opposed to full animation, best represented by the Disney classics, where there may be as many as 24 drawings per second of film. Furniss states, "During the 1990's, made-for-television animation in the United States has been undergoing a creative rebirth...Limited animation still plays a significant role in the aesthetics of the new shows; however, one finds much less criticism of the technique than existed in previous years" (148). Audiences seemed willing to accept the new aesthetics and – by classic standards – mediocre quality. So the use of Flash software became a very efficient way of producing

successful 'limited animation' on a small budget and in the late 1990s companies like Toronto's Nelvana used it to develop a very efficient production pipeline on shows like Quads and Max and Ruby.

At first, the Flash productions met with some resistance due to its association to 'limited animation'.[44] It created a sense of uncertainty among senior 2D artists that felt restricted by its limitations. Although, it is important to acknowledge that Flash animation was not inherently limited and a few companies did start to use the software for full animation. Traditionally, a 2D animator was expected to produce anywhere from five to ten seconds a week of well executed rough character animation.[45] These would then be handed off to the assistant who refined and 'cleaned up'[46] the drawings. These hundreds of line drawings from the animation department were then scanned and painted by the digital ink and paint department. Simultaneously, the background department painted the scene background elements[47] (drawings) from the layout department—addressing mood, atmosphere, lighting, staging and cinematic aesthetics. In order to finish the scene, the compositing department (camera) referred to the blueprint (camera moves and leveling of elements) provided by the layout artist and assembled the colored scene elements[48] into a finished scene. In many cases, the new Flash animator position integrated all of these steps or at least four of them: animator, assistant animator, ink and

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[44]Animation that makes use of a limited amount of drawings (8 per second or less) to carry out the character performance as opposed to full animation which may have as much as 24 drawings per second.
[45]Refers to the character performances, the animator as an actor. There is also prop animation (ex. car, plane, etc) and effects animation (water, fire, etc.).
[46] Clean up is an Industry term used to describe the job of assistant animators. It is done in black pencil from rough animation drawings, according to a designated line quality established by the style of the film.
[47] Background elements are: background (BG), underlays (UL), overlays (OL)
[48] Scene elements may include: background, underlays, overlays, held cells and multiple layers of character and effects animation

paint background painter and scene compositor. In addition, most studios were asking Flash artists to produce thirty to sixty seconds – this number has not changed very much – of composited[49] animation per week.

The new production pipeline made use of extensive visual 'asset libraries' that were able to facilitate and accelerate production while maintaining continuity in style and design. This was essentially an elaborate 'reuse system' whereby symbols were repeatedly used to generate a constant flow of new animated content. Much of the work was done at the design stage by creating a reuse system, mentioned earlier, that would be accessible by other artists in the pipeline. Characters were designed, colored and separated into elements (assets): heads, torsos, arms. legs, hands, mouths, eyes, and any other part of the character that may need to move. The same thing would be done with location designs, special effects and props, all meticulously catalogued and organized into digital libraries accessible by all artists from their personal workstations (Fig. 9). To address this and other digital communication needs Nelvana developed Nel-net, an internet based communication tool that also allowed for Flash co-productions with other countries like France and China (Stoffman 97).

With Nel-net, Toronto based directors and artists could effectively work with international production crews. One of Nelvana's earliest series *Pelswick*[50] was co-produced with China which prompted Nelvana partner Michael Hirsh to state, "We want to continue to break down barriers and be innovators in our field. That is of critical

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[49] Compositing is the process of generating a single video file from final art (color animation and background elements) – a completed scene ready for editing.

[50] *Pelswick* is the animated series based on John Callahan's cartoons "John Callahan's Quads".

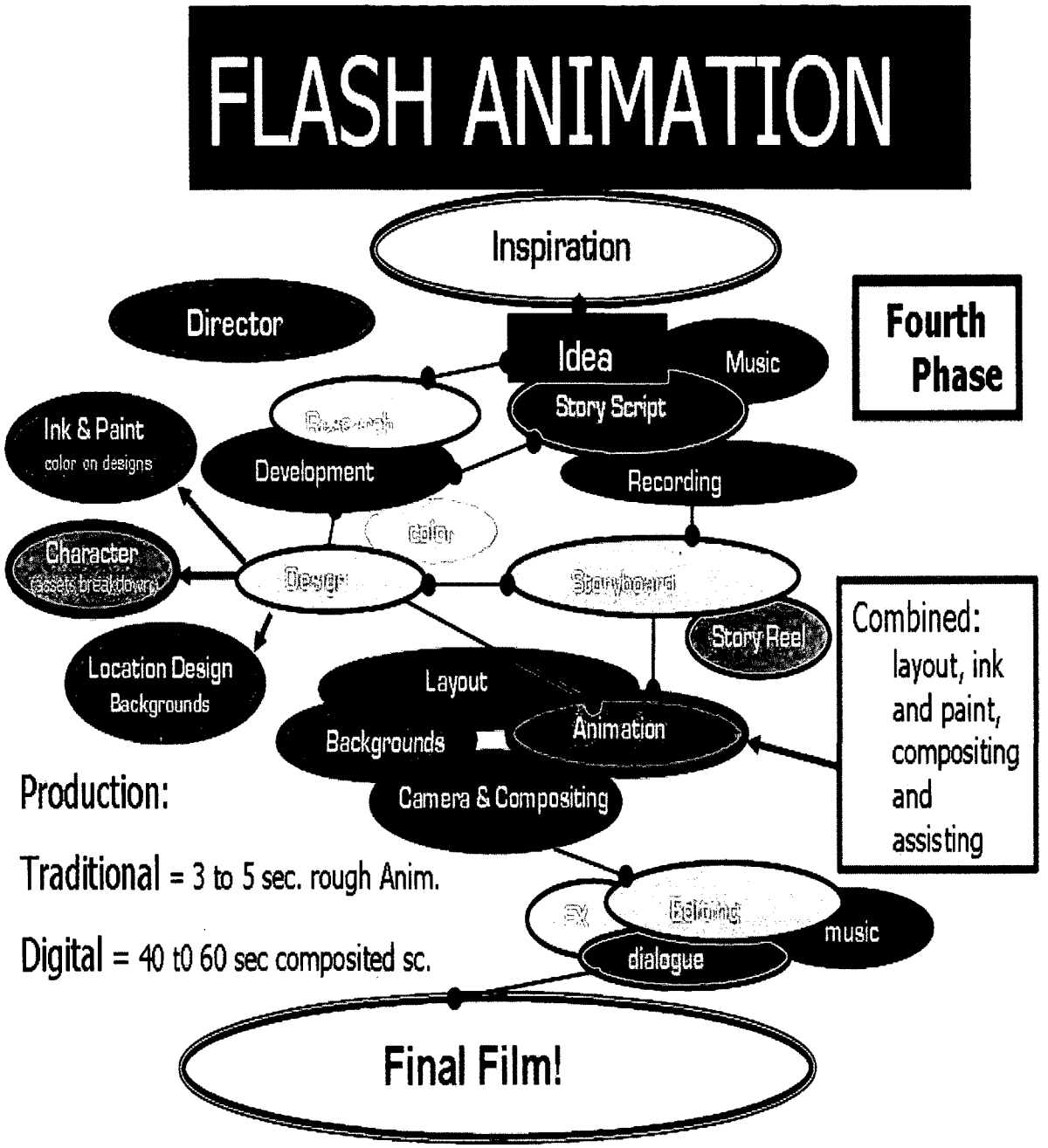

Figure 9. Flash animation production.

importance to us – to be pioneers and keep the medium exciting" (Stoffman 123). This production model was certainly innovative from a 'producer/company' perspective. It assured consistent artistic continuity by creating a controlled style that resulted in the production of acceptable content no matter what the artists' competence level. The assembly line approach was/is widely used in animation but this new production model seemed to homogenize both the art and the artist thereby bringing up issues of worth and creativity.Sophisticated production pipelines supported this new paradigm that placed the production focus on quantity of acceptable quality.

It is important to mention at this point that the adoption of Flash software by TV productions had some unexpected positive results. By drastically shortening production schedules, sometimes by more than two-thirds, Flash software made it cost effective to keep the work in Toronto. In the case of Nelvana it allowed for more 'in house'[51]creative-control. Clive Smith, Nelvana cofounder, said it provided the opportunity to "bring the animation back to North America". He referred to the fact that traditionally, because of the high production cost, projects were animated by 'overseas studios'[52], many of them working out of South Korea or Taiwan (qtd. in Stoffman 97). He explains that in the past Toronto offered very few opportunities for character animators whose job of bringing characters to life is the heart of the industry. However, Flash was not designed for animated TV series so in the late 1990s innovative production models had to be formed. Winder and Lowlatabadi found that, "[...] the increased speed in production is typically a

[51] This is an industry term that refers to animation produced at the companies own facilities.
[52] 'Over-seas studios' is an industry term that refers to subcontractors or co-producers usually based in Asia.

direct result of being able to spend substantial time and money to develop and tailor the necessary software required for the show. These funds have to be spent up front in order to secure a functional production pipeline" (qtd. in Stoffman 16). Nelvana understood this well and produced a Flash production manual meant to teach both senior and junior artists. The assumption was that this new pipeline would simplify and streamline the process by integrating a number of animation phases (Fig. 11) executed by a single artist.

Though the process offered terrific production value and brought animation back to Toronto, many established artists felt that the digital tools had a negative effect on quality and employment opportunities. While giving artists more control over their work it also eliminated some specialized jobs like animation clean up, ink & paint and the camera operator/compositor that conventional production models had always relied on. The new model caused a displacement crisis within production teams whereby animation artists, layout artists, and design artists became 'do it all flash artists' (Fig. 11). The software had leveled the playing field causing the seniors to resent the tool. Within these efficient fail-safe pipelines, junior artists were asked to do the same job as the senior artists thus creating the perception that the newbies were just as valuable and effective as the old timers. Inexperienced, untested, junior artists worked side by side with the senior artists, not as assistants but as equals producing similar quantity and quality of animated content.[53] This blurred the traditional line between newcomer and old timers, thus putting into question the established power structures. The role of master and apprentice had

[53] Animated content refers to a completed scene (composited) and was usually measured in seconds per week.

drastically changed, disappeared, and opened the door to questions of seniority, expertise and pay scales.

Junior artists now had an opportunity to quickly and fully be integrated into the industry through "full participation" (Lave, Wenger). Ward argues, "people will position themselves in relation to knowledge communities by thinking through what they do and think to what others – perceived to be already part of the knowledge community in question - do and think" (231). The 'others' in this case were the many seniors who were frustrated by a tool that they felt obstructed their ability to manifest their potential thereby lowering their self esteem and personal artistic fulfillment. This reality was accompanied by a frustrating feeling that their experience and status within these new creative teams was being compromised. Additionally they saw their finances diminish because of new pay structures that demanded more animation for less money. At first this resulted in a significantly non-synergistic working environment.

During this time of transition, legitimate peripheral participation, trainability and recontextualization were concepts that made the transformation possible. In most cases, artists would be given a week of orientation with the bulk of the learning left to 'on the job training' through situated learning. The interviews conducted revealed the challenges with assimilating the new digital knowledge and skills. For most of the senior artists, trainability was not an issue yet some of them chose not to pursue these new tools because of their limitations. Bernstein explains it this way, "The concept of trainability places the emphasis upon 'something' the actor must posses in order for that actor to be

appropriately formed and re-formed according to technological, organizational and market contingencies" (59).

The senior artists had that 'something', that experience and foundation, yet many resisted. They had developed trainability through the acquisition of fundamental skills like drawing, painting, animating, storytelling, storyboarding, design, knowledge of perspective, staging, composition and more – skills and knowledge areas essential to all animation productions: 2D traditional, 2D Flash, 3D, Stop Motion, hybrids and independent auteur driven projects. One of the frustrating aspects of the Flash software was trying to recontextualize the knowledge and expertise the artists had worked so hard to acquire. Eventually, seniors became experts at applying the fundamentals of animation and they pushed the tools to the extremes but still felt limited.

The juniors, on the other hand, free of pre-existing expectations, felt very comfortable with the tools but struggled to achieve reasonable success because of the imposed demands and expectations that exceeded their abilities. Ultimately, the implementation of new digital technology, and the crisis it created, had a positive effect on knowledge areas mitigated between the senior and junior artists. Everyone benefited by the synergy created through the new dynamic relationships that planted the seeds for innovation. Lave and Wenger propose,

> As an aspect of social practice, learning involves the whole person: it implies not only a relation to specific activities, but a relation to social communities – it implies becoming a full participant, a member, a kind of person. … Activities, tasks, functions, and understandings do not exist in

> isolation; they are part of broader systems of relations in which they have meaning. These systems of relations arise out of and are reproduced and developed within social communities, which are in part systems of relations among persons. The person is defined by as well as defines these relations (53).

For the animation community discussed in this thesis the 'broader system of relations' referred to was rooted in the past. Old timers, senior artists, were forced to redefine their relations to fit new realities. They went through three distinct phases, the first was fear of change.

A common theme in many of the interviews was the rejection of these digital tools on grounds of their inadequacy. They feared the inability to create acceptable results. Nevertheless, they eventually recognized the new direction as the future of animation. As they mastered the new tools they moved to phase two, accepting the change, and quickly realizing that it was not a satisfying new reality.

The new digital model did not offer the same creative set of relations and modes of expression that they were accustomed to. Recognizing the limited nature of the current Flash software, the artists entered the third phase, directing change.

Driven by their needs and wants, the artists created new dynamic artistic relations and dynamic systems that were conducive to traditional animation practices. They inspiredimprovements to digital tools like Flash and the evolution of new vector-based

tools like Toon Boom[54] whose owners were open to change, growth and innovation. Nelvana brought teams of 2D and 3D animation artists together and developed Toon Boom into a very versatile software application designed to address both the requirements of large animation productions and the needs of the artists. While describing the clever design of the Toon Boom software and its ability to centralize and easily control creative decisions in a small 'brain trust' of people, Frank Falcone states, "it seems that 2D is going to leap frog 3D (animation)" (Falcone). Artists demand and force the tools to grow and change according to their vision and potential thus projecting the future capacity of the art form (Fig. 10). Bernstein feels that,

> the ability to respond to such a future depends upon a capacity, not an ability. The capacity to enable the actor to project him/herself meaningfully rather than relevantly, into this future, and recover a coherent past (59).

The period between 1994 and 2004 was a unique moment in time for the TV animation community of Toronto. It was a time of transition, when the introduction of digital tools caused irreversible changes to traditional 2D animation production pipelines. To deal with financial challenges caused by shrinking budgets, animation producers focused on implementing Flash software into their production models. These new digital pipelines altered the time-honored traditional roles of 'old timers' (senior artists) and 'new comers' (junior artists). Other roles like assistant animators and inkers were eliminated. In this new digital reality companies struggled to get skills, creativity,

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[54]Toon Boom Animation Inc. is the worldwide leader in animation software solutions. http://www.toonboom.com .

innovation and productivity working together toward a common goal adopted by all. What made it possible were not the digital tools, the production models, or finely tuned pipelines but the employment of 'situated learning' and its key concept of 'legitimate peripheral participation'. Together with 'trainability' these concepts facilitated the 'recontextualization' of the 'old timers' animation skills and supported the 'newcomers' introduction into the industry.

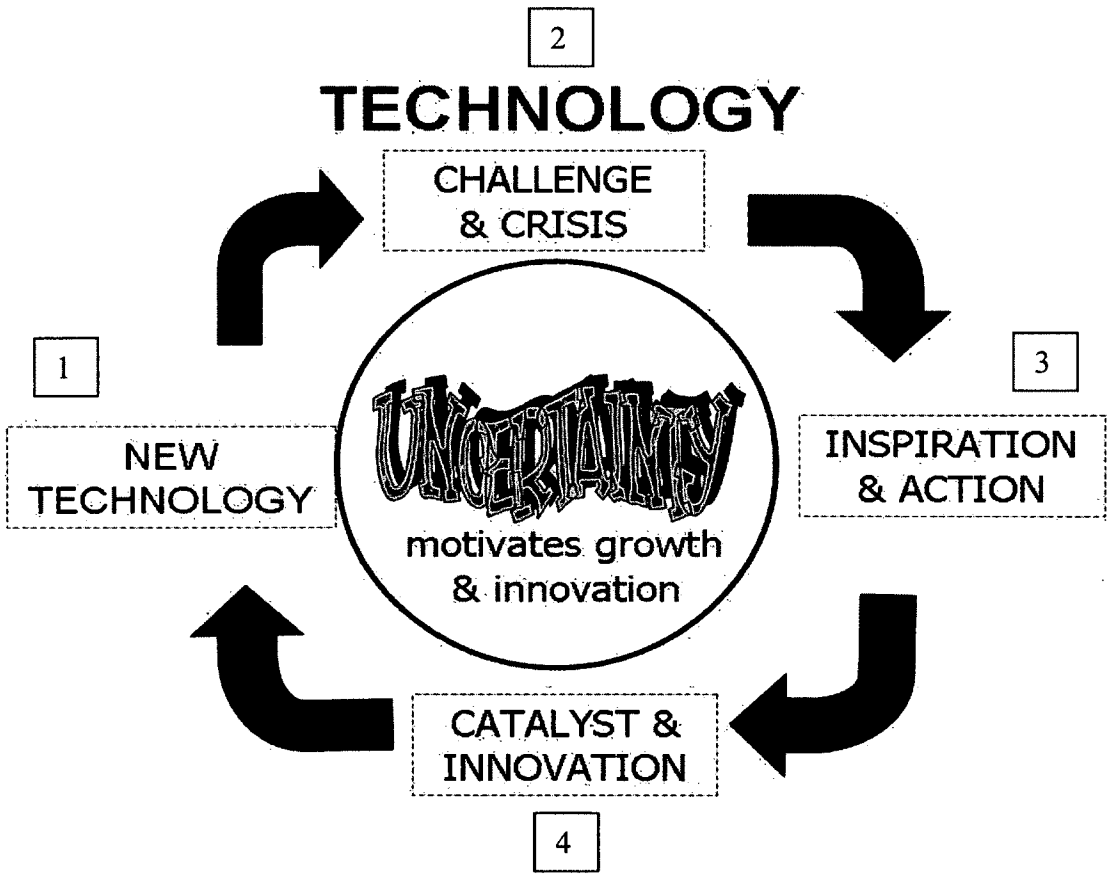


Figure 10. Cycle for implementation and innovation of new technology.

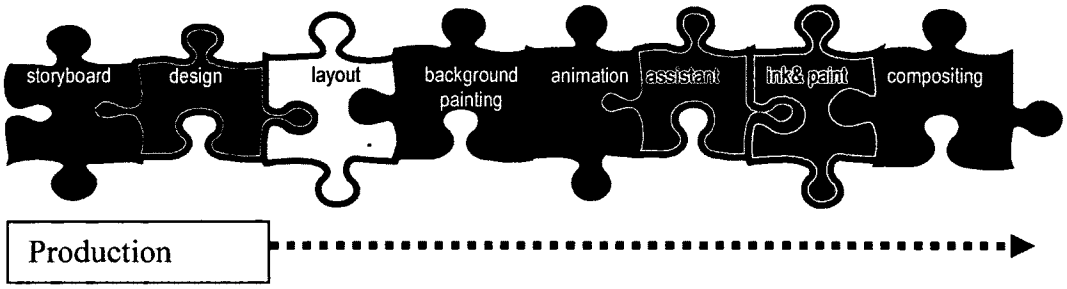
These concepts also helped to mitigate the altered power structures within the new animation production pipelines and motivated innovation that would ultimately be

beneficial to junior artists, senior artists and the animation community as a whole. It is reasonable to assume that the practitioners' experience within this particular community of practice is not unique but rather representative of experiences common to other creative communities. The artists were ultimately successful in overcoming the challenges and went from fearing technological change to affecting technological change. One other result has been the creation of a large Toronto based talent pool of accomplished digital artists who are capable of working both independently and internationally. According to one of Nelvana's founders, Clive Smith, the animation industry is now part of a fragmenting entertainment market,

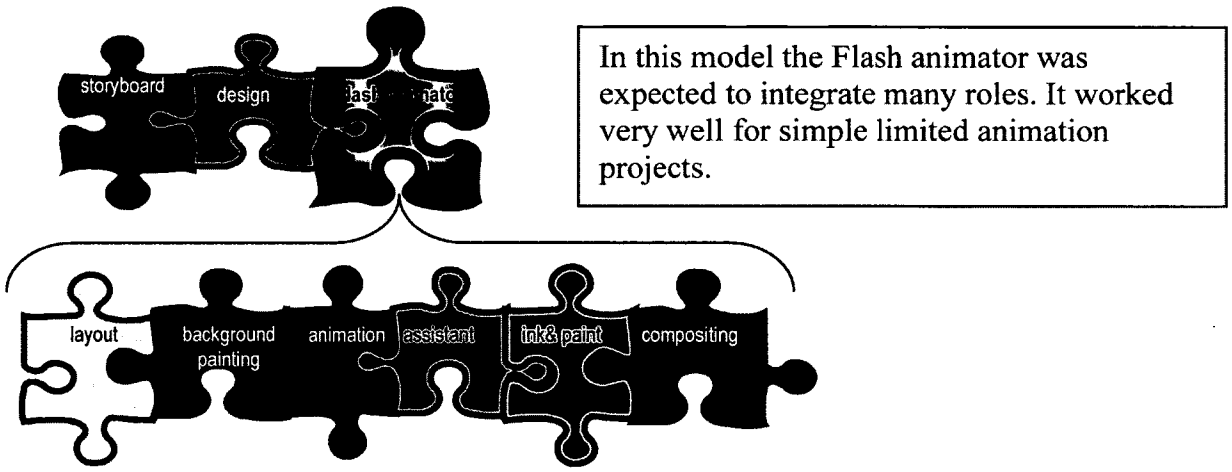
> people are becoming more and more innovative...It's opening up a new world of production for people who can sit down in front of a laptop and produce a half hour of animation. This technology is allowing a renegade industry to open up. So in the future, you will have a very diverse landscape, ranging from innovative, stylized, low-budget productions, which may be distributed over the internet, to big features that will come out in theatres (qtd. in Stoffman 123).

It is my opinion that the GTAAC has a large role to play in this diverse renegade animation landscape Clive speaks of. In the emergent digitized creative economy this community seems to be positioned as a 'glocal' creative force composed of very resilient practitioners willing and capable of engaging and influencing both local and global animation production.

1. Simplified 2D animation production pipeline



2. Simplified 2D Flash animation production pipeline – used in the early stages of transition.



3. Simplified 2D Flash animation production pipeline – widely used model.

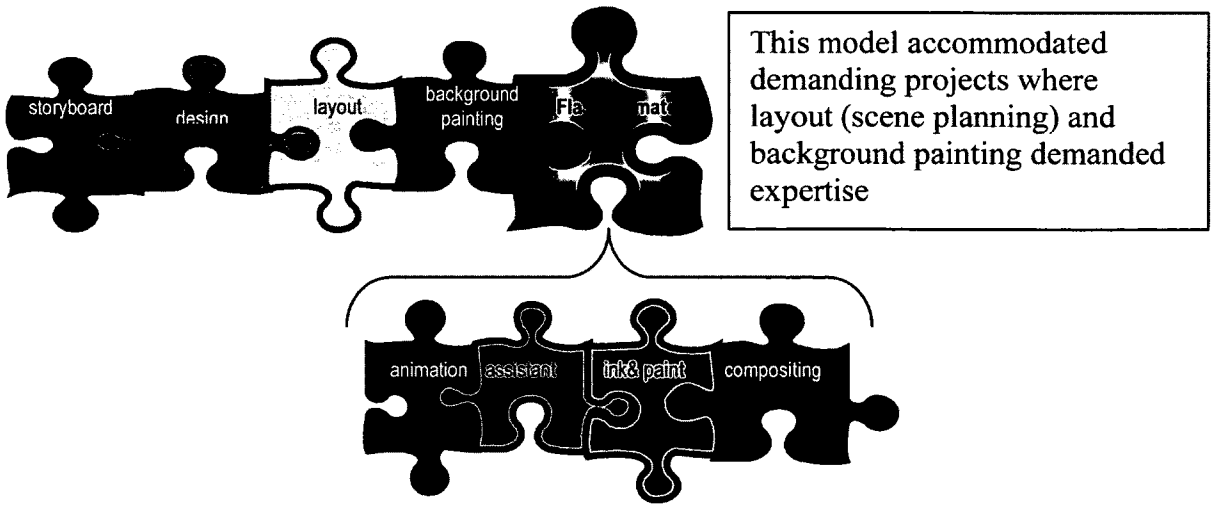


Figure 11. Integration of roles in Flash production pipelines.

4.2 Independent Sector

This sector is quite broad and extends over many disciplines. Identifying the organizations[55] in this sector is unproblematic but classifying its members – the artists they engage – can be difficult and even more complicated when trying to discern the role of technology within the context of their practice. These are artists/auteurs driven by indie[56] sensibilities, free of industrial/commercial pressures and agendas. They choose to use the medium as either the central mode of expression or a peripheral tool in their personal practice, thereby allowing them to be active participants in the community. They may be fine artists, graphic designers, live action filmmakers or some other creative individual choosing to use animation to enhance their artistic voice or vision. Many of them, like Jonathan Ng and Mike Weiss, need to also work within conventional production pipelines in order to support their indie work.

Contrary to what Chris Robinson might suggest in *Canadian Animation: Looking for a Place to Happen*, the Toronto indie scene is quite healthy but in need of more networking and screening forums. The Toronto Animated Image Society (TAIS)[57] has been doing a tremendous job in providing a base for the artists. They are a funded organization that over the years has provided extensive support to the independent animation artists. They have organized workshops, seminars, lectures, master classes, and many short and long screenings of both their members and other organizations including

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[55]Toronto Animated Image Society (TAIS), Liaison of Independent Filmmakers of Toronto (LIFT), Charles Street Video, Naked Frame Festival.

[56]Indie artists are artists that within their practice exercise independence from external creative influence like commercial interests and mandates.

[57] 60 Atlantic Ave., Suite 102, Studio 9, TO., ON., M6K 1X9. http://www.tais.ca/index.html

the Ottawa International Animation Film Festival (OIAF). Because of their roots in industry and the eventual shift – and somewhat tumultuous evolution – toward indie sensibilities they have managed to retain members and interests from a number of sectors. Director Madi Piller states that they strive to organize events and provide forums where all sectors of the community can congregate and network.

One event that was exceptionally successful and is still touring internationally after almost two years since its official opening is the Eleven in Motion Exhibition. Eleven animation artists[58] from around the country produced eleven short films inspired by a painting of their choice from one of the Painters Eleven group of artists. These were then exhibited side by side with the animated film playing on a loop next to the original painting. It was an exciting show that showcased a variety of animation approaches.

I conducted interviews with seven of the animators some of whom used the production facilities offered by TAIS which is equipped with both traditional Oxberry cameras and digital animation tools. They created short films through a variety of unique executions, some refusing to use any technology except for post production purposes like editing and sometimes compositing. My perception is that they see themselves as animation activists. Some like Richard Reeves and Steve Woloshen used traditional direct film techniques like scratch or paint on film and others like Nick Fox-Geig produced totally digital films that were surprisingly organic. Still others like Patrick Jenkins, Pasquale LaMontagna, and Félix Dufour-Laperrière used digital technology to support and abstract traditional flat art or photography. This particular exhibition was

[58]Steve Woloshen, Richard Reeves, ÉliseSimard, Félix Dufour-Laperrière, Pasquale LaMontagna, Patrick Jenkins, Lisa Morse, Nick Fox-Geig, Richard Rexlan, Ellen Bessen and Craig Marshal.

held at the The Christopher Cutts Gallery but in many cases TAIS has cooperated with many other organizations including Sheridan College and the National Film Board (NFB) whose Toronto office screening facilities they have used often.

The NFB's role within the GTAA community has been somewhat limited to the promotion of the animation medium.[59] It continues to support artists through their Montreal office which provides excellent production facilities and is the location where McLaren[60] produced most of his films. My attendance at the Society for Animation Studies conferences clearly impressed on me the effects that the NFB has had on animation communities all over the world. Its international reputation is extraordinary. This realization has caused me to wonder why the NFB does not provide production support and opportunities to the rich animation talent within the GTAAC. The current model demands that artists leave their current studios and reside in Montreal for the duration of their production, which could be years. Exceptions have been made and alternate arrangements have been set in place for GTA artists, but it is not the norm. It is perplexing to seethat an organization so important and intrinsic to our Canadian cultural identity would not have a more supportive production presence within such a rich community of artists. Perceptions of informants I spoke with – who do not want to be identified – were that the issues are both financial and political, but there is hope that more production initiatives for artists and engagement with the community are on the way.

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[59] Toronto office hosts a Cinematheque screening theatre, streaming personal screening stations in the lobby and animation workshop spaces for outreach and education.

[60]Norman McLaren is the most famous and prolific of all the NFB animation artists – his centenary will be in 2014.

One group of the GTAAC I followed over the two years of my study are the artists and organizers from the 'Naked Frames Festival', an animation festival in Toronto that blends music performances and animation screenings to produce a unique combination of entertaining and thought provoking content. The interesting aspect of this festival is that it operates without sponsorship and continues to attract films from independent international animators and musicians that fuse animation and music. Mike Weiss the organizer of the festival is himself an artist and graduate of the Sheridan program. With the help of a few fellow artists, TAIS, and social media networks like Facebook they manage to have two to three screenings[61] a year using digital files (DVD) for projection.

With so much of today's digital animation production being driven by industrial application and commercial consumption, the act of using the medium for personal artistic expression becomes an activist fringe activity that pushes the medium's social and cultural communicative power. There are more animated short films being submitted to both animation and non-animation film festivals than ever before. This trend has been felt by many of the GTAAC small and large festival organizers. The Director of the OIAFF, Chris Robinson, stated that the number of films submitted to the festival has been steadily increasing since the year 2000 from just a few hundred every two years to now thousands on a yearly basis (Robinson). He attributes most of this increase to the digital tools that have democratized animation production.

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[61]Most screenings were at the Revue Cinema, 400 Roncesvalles Avenue (416) 531-9959 www.revuecinema.ca .

4.2.1 Democratization of Animation

In the last two decades digital technology has democratized the moving picture culture and it has made the animation medium accessible to all. The democratization of animation through user friendly software is escalating auteur and independent production of content thereby giving life to new cinematic experiences and cultural artifacts that areinfluencing contemporary cinema codes. It is used as both a passive edutainment[62] medium and exceedingly as an interactive and engaging interface by the emergent creative economy and related industries like gaming and pre visualization (pre-viz).

By simplifying animation production, the new digital tools have unleashed a collective creative potential from all members of society: young and old, professionals and amateurs, artists and novice techno users alike have all been empowered, thus increasing the cultural production of unique narrative content. Modes of distribution have also been irreversibly altered thereby providing empowering options for artists. The internet is the ultimate example of this. Nathon Gunn, CEO/CCO of Social Game Universe & Bitcaster stated,

> the democratization of user generated content tools, has been the core shift in a one to many broadcast model CBS, NBC, ABC talking to everybody, to a many to many broadcast model...what we have is people being their own broadcast curators (Gunn).

We don't need to look any further than YouTube and Vimeo to realize the irreversible empowerment that new technologies have provided to both consumers and producers of

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[62]A cartoon that both educates and entertains (eg.*The Magic School Bus* series by Nelvana).

cinematic/entertainment content. These in turn are appropriated by mainstream cinema like television which is full of web based content. An example of this is channels like G4 and MTV that recently dedicated a whole show to web content, "The College Humor Show" (CH Media), where web users assemble/access arbitrary, subjective, objects of interest – video, motion graphics, animation and other artifacts – weaving narratives together according to personal preferences and impulsive choices.

In addition to all the reality content on the web we are seeing more and more machinima short films[63] on YouTube – narratives assembled from CGA gaming assets. That is likely due to the fact that the characters and environments are not only interesting and well known but you can stitch a story together without the need of expensive equipment, actors or film crew. This production heavy aspect of live action films makes expressing thoughts and ideas in a visually interesting narrative quite challenging. As long as one needs real actors and environments one depends on budgets, accessibility and the participation of other human beings. The great animation director Bruno Bozzetto[64] said that he started his career wanting to make live action films but no one ever showed up on set, so he decided to start making cartoons. In the future a computer interface and software may offer producers/filmmakers the freedom to chose environments and actors endowed with traits and artificial intelligence (AI). This would provide an immense and liberating platform for independent filmmaking and the democratization of cinema production.

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[63]Short films made by using video game assets. Basically appropriating existing CG environments and characters from a game and using them to create a narrative/story, http://www.machinima.com/ .
[64]Interview conducted at the OIAFF in 2008.

4.2.2 Activist Animation

The democratization of animation has encouraged the use of the communicative power of the medium for activism. The affordability of the digital tools has inspired the production of short films, documentaries,[65] and websites that could be classified as 'Activist Animation'. These cultural artifacts are contributing to both social and educational discourses. The fact that strong social statements are being expressed through a traditionally prohibitive labor intensive medium historically trivialized by serious filmmakers is in itself an activist act. Producing feature length films outside the traditional industry structure I would argue is also a brand of activism. Bill Plympton has been self-financing his films for decades. In 2001 he stated that he would continue to make his feature films traditionally using paper, pencils, cells and paint (Plimpton). In a related discussion that took place in 2009 e admitted to modifying his productions to include digital tools while still retaining the desired aesthetics of the traditional tools and more importantly his vision (Plimpton).

Artists like Toronto based producer Barbara Taylor and NFB filmmaker Shira Avni have respectively produced films with a strong social message. Barbara, whose film *Tomboy* has received many awards, credits the affordable digital tools for its completion (Taylor). She asked a few industry professionals to lead her production with the bulk of the artists provided by Sheridan's COOP program. This idea of sectors working together on projects is a sentiment shared by many in the community and it is beginning to take root. One example with yet unparalleled success is that of *Ryan*, the Oscar winning

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[65] *Waltz with Bashir, Persepolis, Tying Your Own Shoes.*

animated short CG film directed by independent filmmaker Chris Landreth. The production was supported by a number of organizations including Seneca College, the NFB, and other industry interests.

4.3 Emergent Sector

The GTAA seems to be ready and willing to take on this challenge. Government programs like SSHRC[66] are inspiring innovative research initiatives between industry and educational institutions research labs like Sheridan's VDI and SIRT.[67] John Helliker stated that SIRT has attracted international attention and interest in their projects which are not only meant to develop new applied technology related to the film industry, but also a methodology for teaching and sustainingit. The SIRT initiative brings together COOP students and graduates from across the college in a collective creative environment where original innovative thought can be nurtured and brought to fruition through innovative use of emerging technology.

In a world of cybernetic systems, contemporary man is dependent on digital technology more than ever before. This symbiotic relationship has drastically changed who we are as spectators, thus altering our voyeuristic and innate need to experience alternate 'possible worlds' and narrative modes of entertainment. Ourheightened expectations from technology and dependency on digital databases for just about everything are dislodging perceptions of narrative and eradicating the lines between virtual and embodied experiences. The new moving image industries will have to satisfy

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[66]Social Science and Humanities Research Council.
[67]Visualization Design Institute (VDI), Screen Industries Research and Training Centre (SIRT).

the desires of an increasingly shifting audience transformed by a virtual age of interactive gaming and multiple digital identities. It therefore stands to reason that the use of animation within the emergent creative economy will echo and speak to this posthuman condition and its evolving posthuman audience. This is an audience with a desire to evolve and gain untold abilities from technology—like Batman and Ironman. The innate expectations of the emergent cyber-audience will soon demand the invention of posthuman narrative experiences like the cyber-cinema.

In the perceivable future it is plausible that creators and consumers of content will have the ability to bypass the contemporary production and broadcasting norms and communicate directly with the brain.[68] Marvin Minsky suggests that,

> it will soon be possible to extract human memories from the brain and import them, intact and unchanged, to computer disks...In the face of such a powerful dream, it can be a shock to remember that for information to exist, it must always be instantiated in a medium, whether that medium is the page from the Bell Laboratories Journal on which Shannon's equations are printed, the computer-generated topological maps used by the Human Genome Project, or the cathode ray tube on which virtual worlds are imagined (qtd. in Hales 13).

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[68]Professor Steve Mann is currently the acting director of the EyeTap Personal Imaging (ePI) Lab at the University of Toronto. researching Mediated Reality (MED-R) systems solutions. http://eyetap.org/, http://www.eecg.toronto.edu/~mann/, http://www.eyetap.org/research/medr/toolkit.html, http://eyetap.org/cyberman/

According to Minsky in order to view man's thoughts, ideas and memories they must first be retrieved as data directly from the human brain and then they 'must be instantiated in a medium'. That's where the transformative power of CGA could have a role to play, turning digital data into digital imagery. Artists could create narratives straight from their thoughts and memories, removing all limits on their imagination. Through a CGA interface audiences could then conceivably receive those narratives through neuron circuits, bypassing the eye and eliminating the need for a screen. Products and services that provide brainwave controlled experiences are now available on the market through companies like Emotiv[69] or Toronto's Interaxon[70]. Interaxon is breaking new ground with itsthought controlled technology. Ariel Garten and her team have been creating "brainwave controlled experiences, games and applications" for years. TheInteraxon technology is a software and hardware interface that can be used to control just about anything using your mind. Brainwaves are convérted into digital signals that initiate an action through a computer interface. Such surreal yet believable and plausible notions are what positions CGA at the centre of the synergistic relationship between this technologyand the gaming interface.

4.3.1 Contemporary hybrid cinema

As discussed earlier CGA adds invaluable content to contemporary narratives but it also inspires new, innovative, cinematic codes and approaches. Ground-breaking use of CGA within contemporary cinema is at the forefront of innovation, thus ascertaining the

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[69] http://www.emotiv.com .
[70] http://www.interaxon.ca .

narrative power of hybrid cinema as the norm. McLuhan's ideas on media hybrids are very applicable to this type of cinema. He felt that,

> The hybrid or the meeting of two media is a moment of truth and revelation from which new form is born. For the parallel between two media holds us on the frontiers between forms that snap us out of the Narcissus-narcosis. The moment of the meeting of media is a moment of freedom and release from the ordinary trance and numbness imposed by them on our senses (55).

Contemporary cinema no longer has to depend on the photographic indexical properties of film in order to inject the audience with an unquestionably realistic story. Cinema has increasingly acknowledged the employment of CGA as an enhancing, and liberating medium. It is the new realism or pseudo realism—an illusory reality that fools the mind. This ability to mimic the world around us—thereby confusing the boundaries of authenticity and certainty—makes it a great tool for today's hybrid cinema.

In his book, *Cartoons: One Hundred Years of Cinema Animation*, Bendazzi quotes animator Alexander Alexeieff who in 1973 wrote that the repertoire of photographic cinema is limited and close to exhaustion,

> thus implying that animation would come to the fore and be recognized as the progressive medium that it is. This is a view wholly vindicated by: the championing of animation by broadcasting companies, commercial industries, museums and educational institutions in the 90s; the use of animation as part of the repertoire of special effects, deployment in

> mainstream cinema...and the rise of computer animation almost as a new digital cinema in its own right (Wells, "Understanding Animation" 7).

Through CGA, it is now possible to create any virtual world we want, populated by any characters we desire in order to construct any narrative we can imagine. Worlds like *Lord of the Rings* where fantastical creatures come to life and the deformed ghoulish CGA character of Golem seamlessly blends with the other human actors. Andy Serkis' astounding performance as Golem proved to be another great example of hybridism at its best. The CGA Golem blended seamlessly with the live action footage by uniting the actor's talent, the skill of the animator, and the technology. At the 2009 Visual Effects Awards, Andy stated that actors are no longer limited to their physicality, they can use their talent to produce incredible characters without the aid of makeup. It is important to mention that Andy also played King Kong in Peter Jackson's remake of the film. This CGA character is a fusion of talent and technology that no amount of make up could have possibly imitated.

Another award winning film whose narrative was brought to life through this hybrid effort is *The Curious Case of Benjamin Button.* As with the character of Golem real actors were used to produce the illusion of Brad Pitt (Button) physically becoming younger throughout the film. In this case though, facial performances from Brad Pitt of the un-aging Button, were merged with the live action footage of the body from another actor whose body structure fit the age depicted. Pitt's performance was adapted by CGA artists to generate a variety of stages in his life including a decrepit old man whose body structure Pitt could not have possibly imitated.

In contrast to the films mentioned, where CG characters have been infused within real environments, there have been many successful films that have done the opposite. That is to say, they used CGA environments as backdrops for real actors. One of the most popular, and earliest, is *Sky Captain and the World of Tomorrow,* a 2004 American pulp adventure, science fiction film shot on what is referred to as a *"digital backlot"* where actors are shot against a green-screen (blank background) and the artificial environment is added in later during post production. Other films produced this way are popular hits like *300, Sin City* and *The Matrix* trilogy, a classic.

Documentaries are increasingly using CGA to simulate complicated bio and mechanical systems that would otherwise go unseen. Animation's ability to clearly illustrate and recreate both historical facts and theoretical concepts is unmatched.[71] Today's *forensic animation* seems to satisfy the cybernetic audiences' need to see and experience the surreal, hidden, or otherwise unexplored worlds of the uncharted universe or something as small as the microbe within the human body. Much of the programming for the Documentary, History and Discovery channels use CGA to better communicate to audiences in a dynamic and lucid manner.

Forensic animation also offers terrific entertainment value and solicits our fascination with the unknown thus, playing an important role in constructing our expectations of technology. In some cases like the television series *CSI (*Crime Scene Investigation) the advanced tools and processes that help in crime investigation are established so convincingly through CGA that many—including students of the

[71] Discovery Channel documentaries like "Monkey city" uses CG footage for environment and dynamic shots that blend seamlessly with the live action.

profession—believe they really exist, consequently producing unexpected social havoc. Examples of this are juries that expect a case to be proven through non existent methods, processes, and tools showcased on shows like *CSI*. In the blockbuster hit *The Dark Night* a shattered bullet is digitally reconstructed in order to lift a digital fingerprint. Somehow the indexical quality of digital technology has given credibility to cinematic content. This is perhaps because we relate digital to the infallibility of the computer. It seems that audiences tend to accept forensic animation as real if placed within the context of a documentary or live action film. To believe that these things really exist speaks to our posthuman condition. There is a want, a need to engage with technology and have it augment our reality, our abilities as humans.

The high demand for these CGA applications in contemporary cinema has generated a great amount of research activity. Professors at UCLA have been developing virtual stuntman. We have seen this type of CGA used in many contemporary movies like the *Matrix, Spiderman,* or *Star Wars*. This research is going even further and creating a database which will eventually hold an extensive collection of computer animated, human, facial expressions and emotion. These virtual actors would be able to act out a performance as a response to a stimulus triggered by an agent or possibly a gaming interface with multiple virtual characters. Within documentaries the medium has the power to lend witness to the indescribable, the impermissiblesubject matter thereby giving life to witnessin – witnessing social issues and concepts that would otherwise be ignored.

The mimicking power of the computer animation medium is so convincing that it blurs the lines of reality. Contemporary cinema has taken full advantage of this ability through hybrid productions. The seamless cutting back and forth between live action and CGA simulations easily draws audiences into the film's narrative. The medium's flexibility makes it an indispensible tool in the creative arsenal of today's hybrid cinema directors who need to satisfy a current audience that demands more pseudo-realism, delivered faster than ever before.

4.3.2 Possible worlds: CG animation and video games

In his article "Virtual Recentering: Computer Games and Possible Worlds Theory", Jan Van Looy attempts to "evaluate the benefits of using a possible worlds framework to describe virtual worlds as they occur in computer simulations and games" (1). He states that "Possible worlds are a construct of the mind rather than absolutely existing entities" (6). Through concepts such as virtual recentering and minimal departure, he explains the ideas that make fictional worlds 'possible'. He discusses their value to the game industry, and by extension cinema production.

Contemporary cinema is saturated with great examples of successful hybrid films but computer animated features have carved out a niche of their own within contemporary cinema. With successful movies like: *Toy Story, Shrek, Finding Nemo, A Bugs Life, Ice Age, Cars, Ratatouille, The Incredibles, Bolt, Up, Monsters vs Aliens, How to Train Your Dragon* and many more, CGA features have a bright future.[72] These

[72]Pixar opened a studio in Vancouver Canada in the fall of 2009 - a 20,000 square-foot facility - to produce its popular short features. Vancouver also seems to be attracting investments from big studios.

are worlds where human imagination is set free and important issues explored. Through skillfully crafted narratives anthropomorphic characters tackle contemporary issues of man's relationship to the environment, himself and his future, as seen in *Wall-e* and *Robots* which deal with themes of power and greed.

There has also been a successful attempt at using digital versions of real actors, virtual actors. In the film *Beowulf* Anthony Hopkins, John Malkovich and Angelina Jolie were convincingly represented and their virtual copies delivered respectable performances, though they still lacked that indescribable "real" quality. The film itself, especially when seen in 3D on a gigantic theatre screen, was very impressive and entertaining. It demonstrated the limitless power of the medium to create persuasively realistic environments, possible worlds.

The use of CGA has not yet generated the kind of audience response that it would need to create interest from producers, but one big hit would solidify its future within cinema. McLuhan points out, referring to literary works, that "from the point of view of the owners of the film and related media, the best seller is a form of insurance that some massive new gestalt or pattern has been isolated in the public psyche" (55). This is certainly proving to be true of today's cinema audience that is craving for CGA hybrids and features films, whether they be photorealistic, stylized, or anthropomorphic characters, is establishing a clear and undisputable pattern.

A perfect example of possible worlds can be found in video games. Companies like Ubisoft have decided to open their doors in Toronto, and along with many others like

Rockstar,[73] the gaming sector is well represented in the GTAAC. In addition to providing animmersive entertainment experience, games have also been a source of inspiration for many CGA features. Movies like *Final Fantasy* take the audience to fantastical worlds filled with compelling virtual characters that already have a following because of their game origins. The unquestioned success of the games industry – the cubist[74] and reflexive video game play experience – suggests that it will definitely have implications on future cinema.

> In addition to being a billion-dollar industry, a testing ground for new technologies, and an engine driving software research and development, game design and publishing is an experiment within a virtual community and thus is a leading-edge industry, employing legions of designers and architects, testing the boundaries of real and virtual experience, and exploring ways that the two may be woven together (Dollens 2).

Part of the success of the gaming industry may be attributed to that sense of 'immediacy' that gaming offers. It is very similar to that intangible 'being there sensation' experienced by an audience when watching a broadcast of a live event. There is much more emotional investment when watching a live broadcast and games simulate that through the interactive play and unresolved narratives. Games like Halo provide a world where 'the player' can exist in an alternate reality and lives a virtual life in an imagined world of the future or even the past. In the online multiplayer (internet) gaming experience users/spectators, gamers, produce 'immediate' storylines through their game-

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[73] http://www.socialgameuniverse.com/, http://www.digitalextremes.com/, http://www.bitcasters.com/.
[74] This idea was inspired by McLuhan's discussion about cubism and "the medium is the message" (13).

play. Individual players within a common experience generate their own point of view (POV) narratives – as in first person shooter games (FPS) – through the pursuit of their personal goals and those set by the game. The popularity of the online virtual world of *Second Life*, where users literally live out a second life through their avatar, is a powerful example of possible worlds. A CBC documentary reported the surreal reality of some users who literally left their old life behind in order to start a new life with their virtual avatar. This type of behavior is not due to the fact that the virtual world is so real that the user believes it is an absolutely existing entity. It is rather a 'construct of the mind' spawned by a deep need expressed by the user and filled through a gaming interface powered by CGA.

Human imagination seems to be preoccupied with creating new and innovative ideas. There seem to be an infinite number of alternate worlds, from total fantasy to prolific simulations of reality. In many of the movies discussed we are looking at futuristic versions of ourselves, possibly aspiring to understand what the future may hold, or unconsciously pre-visualizing its creation. This answers to an innate desire to become something other than we are, something better or at least different, something posthuman.

4.3.3 Theorizing the Impossible: Quantum Cinema

Much of contemporary cinema, possibly as much as ninety percent, is hybrid productions that use CGA footage to augment narratives and create fantastical worlds and effects. Feature films like *The Matrix, Lord of The Rings, Ironman, The Curious Case of Benjamin Button, Avatar*and TV series *like Fringe, CSI*, and *Heroes* have all been enhanced by CGA. Some would not have been possible without it. In addition, fully

animated features have cut out a niche of their own with big box office hits like *Toy Story, Finding Nemo, Shrek, Wall-e, How to Train Your Dragon* and many others. Computer animation has proven itself to be an exceptionally flexible and transmutable medium that is perfect for the post-human audience.

There is an enthusiasm, a necessity, felt by many filmmakers for the rebirth of cinema. Both large studios like DreamWorks and independent filmmakers like Peter Greenaway who stated 'let's re-invent cinema' share similar sentiments. We might not know what it should be but many filmmakers agree as to what it should stop being. Greenaway wants to do away with the tyrannies – as he calls them – holding back cinema: the text, the frame, the actor and the camera. In his article entitled *Expanded Cinema, Video and Virtual Environment,* Peter Weibelshares a similar opinion and calls for a new interface using machines of perception – "machine vision on a molecular scale is one possibility of the future cinematic imagery"(6) – rather than motion machines (cameras). There is a need to shift from the mundane contemporary cinema to the inevitable new digital cyber-cinema of the future. Computer animation is poised to become the prominent medium in the realization of this new cinema and it may be that the only way to discuss its future is to discuss the future of CGA.

Database technology has provided fertile ground where a new vision for cinema may be forged. According to Weibel, the new cinema may be all digitally manufactured information and seen through a cyber-interface where the virtuality of information storage – its pixels – is variable and infinitely alterable (Weible, "The Intelligent Image"

594). Today's interface technology still depends on interaction with the human senses, the contemporary gaming interface being the best example of this.

Weibel states that interfaces are changeable, porous, and can be manipulated and altered. He envisions a change, an expansion of the interface so as to expand cinema, where the observer would become part of the system he observes – an internal observer. He proposes constructing the next cinema without light and eyes but rather through the direct stimulation of neural networks, in other words a system that communicates directly to the brain bypassing the eye"perception without the senses...The brain as opposed to the eye would become the screen" (Weible, "The Intelligent Image" 597). This idea that he calls 'quantum cinema' seems to parallel concepts and ideas discussed by both McLuhan and Hayles. Weibel explains that it would provide a large stage where the local "one viewer – one film – one place – one time" would transform into a multi-user virtual cosmopolitan environment " x viewers – x films – x places – x times". Any person anywhere would see a different movie and all made "feasible with virtual information storage in a quantum computer" (Weible, "The Intelligent Image" 600). This concept would certainly make Greenaway happy. It would free cinema from some of the tyrannies that are holding it back. We would not need to "use a frame to contain the shape of the world....If the frame is a man-madedevice, then just as it has been created, so it can be un-created. The parallelogram (the frame) can go" (Greenaway 7). What better way to do this than to have a direct line to our brain and experience a film first hand as if one is truly there, no boundaries, no frame. This concept could only be realized through a virtual simulated reality made possible by a CGA interface.

While eliminating the tyrannies stated by Greenaway (5) the new quantum cinema would still need to address the audience's need for story/narrative. Within a new post-human cinema narrative this may possibly be achieved through the intervention of cybernetics and computer generated creativity – as it relates to story narrative systems. It could be argued that a combination of current cinema codes and video game codes is a plausible hybrid solution. This idea considers computer generated creativity as an extension of the agent's desire for a specific story/narrative experience. The audience/user may conceivably establish preferences, in addition to ongoing subconscious feedback, that would be communicated to the quantum computer through cybernetic systems driven by advanced artificial intelligence. This concept would provide a truly unique and thoroughly satisfying cinematic experience tailored to meet the user's needs and expectations in real time just like a video game. The only medium capable of addressing the needs of such a futuristic idea is CGA.

4.4 Education Sector

This is the sector I am currently employed by and the one I will more than likely spend the rest of my career in. I therefore decided to explore some very important issues that lie at the core of animation pedagogy. Much of the information shared in this section is taken from a paper I delivered at the 2011 Society for Animation Studies Conference held at the University of Indianapolis, Athens Campus. The paper used data collected for my thesis to inform discussion on pedagogic integrity, curriculum enhancement and innovation within animation programs.

There are just a few notable animation programs in the greater Toronto area and they are all designed to deliver the curriculum in very similar ways. Sheridan is the only Applied Degree Program and, because of its long history, the most respected. There is also a terrific program at Seneca College that includes gaming. Other institutions that offer a mixture of multimedia options like media studies and motion graphics are: Humber College, Centennial College, Ryerson Institute, and OCAD University with universities like York and the University of Toronto employing animation as a medium for visual artists, communication and cultural studies. There have also been a number of private schools that have tried to establish themselves in Toronto: The Academy of Design, The Art Institute and Max the Mutt. With the exception of the latter started by ex-Sheridan teachers Maxine Schacker and Tina Seeman, the rest have all folded due to both sustainability issues and Ontario government regulations that made it impossible for them to offer degrees. The challenge of teaching animation is probably true to many other artistic vocational programs. It becomes a question of pedagogic integrity. Are institutions teaching the next generation of artists to be effective members of the global creative economy?

4.4.1 Animation and Pedagogic Integrity

Animation's significant presence in the creative economy should signify a need to rethink its role within it and the way it is currently taught in educational institutions. For a program to retain pedagogic integrity it must effectively mediate the institutional mandate, student expectations and industry demands and develop curriculum that

addresses very clear goals and vision. Sheridan College, where I teach, engages in applied research that amongst other objectives is meant to enhance curriculum within its practice based program where the formation of a creative, innovative, animation practitioner is a core mandate. In the past the institution has met this goal with great success but due to advancements in digital technology the medium and its practice has evolved and transformed it. Programs like Sheridan's Bachelor of Applied Arts in Animation need to consider scholarly discussions on animation's emergent cultural and industrial role. This would serve as a basis for curriculum rethinking and revision that would lead to a more flexible and effective practitioner within the creative economy.

The new animation technologies are affecting students' learning expectations. Their perception of the roles available within a promising creative economy means they demand to learn methods, practical applications, skills and principles that will make them employable. Meanwhile the evolving university culture within applied programs increases the pressure to implement a more academic model where knowledge creation is as necessary as teaching applied skill-sets. Educators have been empowered with the responsibility to develop new curriculum and delivery methodologies meant to produce the required workforce for this dynamic medium. But are we merely – as Basil Bernstein explains – "recontextualizing agents" of the medium's practice? (8) As teachers and curriculum designers we need to effectively negotiate the 'tensions' caused by compounded external and internal demands and retain pedagogic integrity.

In the last decade or so there have been many animation programs that have come and gone. Many of them focused on teaching software and not necessarily the essential

knowledge and principles that underpin the medium. Many of the digital tools used in contemporary industrial animation production are becoming the focus of the new animation curriculum. It is not to say that a focus on the medium's digital tools is necessarily bad, but if the program claims to be teaching animation it becomes a question of integrity. When is it appropriate for a program to claim that they are teaching animation? What is the balance between the teaching of technology and teaching animation fundamentals: character animation and performance, animation history, storyboarding, design, art direction, compositing, editing and other relevant skillsets?

As important as the new tools and approaches are, technology alone will not result in better animation products. If we neglect to develop the softer side, the heart of animation, we will be assisting in the development of animation products that are limited in vision and cold and dispassionate in delivery, an artistic artifact without heart. In her paper "A Spiritual Ecology: Finding the Heart of Art education", Sally Gradle discusses ideas of individual intelligence, artistic autonomy, the importance of community, and the collective effort, as they relate to"multiple origins, multiple thinking that brings us closer to the heart of art education" (78). I would argue that a pedagogic model that combines knowledge and skills related to the practice and informed by technology is not sufficient. Students must develop the interpersonal and collaborative skills essential to working in a field as dynamic as animation. This would elevate the process from mechanical to a craft profession and allow them to contribute in a vocational capacity to animation projects.I will use Sheridan's BAA Animation Program as a case study and discuss the strategies and approaches that have been used to both design and deliver the curriculum. I will

discuss the successes but also areas that could improve and others that challenge the integrity of the program.

4.4.2 Recontextualization, Trainability, Identity and Inquiry Based Learning

In his book *Pedagogy, Symbolic Control and Identity: Theory, Research, Critique,* Bernstein maintains that 'pedagogic discourse is a recontextualising principle' consisting of both an instructional discourse and a regulatory discourse (113). The instructional discourse (ID) deals with specialized skills and their relationship to each other while the regulatory discourse (RD) deals with the moral discourse which creates order, relationships and identity. According to Bernstein this is the dominant discourse that controls many of the fundamental pedagogic decisions. Bernstein argues that the pedagogic discourse takes other discourses, whether it be physics, chemistry or animation, and appropriates them, changes them, recontextualizes them so that they are somewhat unrecognizable. He states that the recontextualising principle creates a recontextualising field and agents with recontextualising functions (114) (Fig. 12). If the knowledge and skills within any given practice are being recontextualized by these agents, whether they are being taught effectively to the next generation of practitioners becomes questionable. The ID is imbedded and controlled by the RD. The RD dictates the roles and the relationships between the teacher and the student "the what and the how of the theory of instruction" (Bernstein 35) thereby applying ideological elements and stifling any utilitarian initiative by either student or teacher. These concerns are also shared by Smits, Towers, Panayotidis and Lund in theirarticle, "Provoking and Being

Provoked by Embodied Qualities of Learning: Listening, Speaking, Seeing, and Feeling (Through) Inquiry in Teacher Education".

Their "experiences in the program as teachers and administrators have provoked questions about how we understand our own practices, those of our students (i.e., learning as practice), and how inquiry lives – even "mythically" – in everyday practice (44). Their program's inquiry based education and particularly the way that it questions teacher identity and speaks to a "more embodied understanding of learning" (44) and the modalities of listening, speaking, seeing, and feeling are especially relevant to practice based animation programs like Sheridan's. The embodied quality of learning and concept of inquiry based curriculum is imbedded in Sheridan's animation program. The intent is to prepare the students for a career in conventional animation production such as TV or feature films; therefore, much of the curriculum is based on industry feedback from that sector. Industry representatives[75] agree that an important ability that a new comer should have is 'trainability'. This quality is difficult to teach and evaluate within the norms of conventional pedagogic strategies. In today's dynamic fast paced, digitalized creative industries, artists are continuously challenged to adapt, grow, learn and recontextualize their skills in order to meet the ever-changing demands[76]. Bernstein describes trainability this way,

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[75]As the Animation Industry Day Coordinator for Sheridan's Animation programs I have had the opportunity to engage animation industry recruiters and company representatives from Feature and TV production companies (Nelvana, Guru, Cuppa Coffee, Elliott Animation, Dramworks, Disney, Blue Sky, Jib Jab et al.) many who are listed in appendix B, the Key Infomants List.

[76]These insights into the hiring practices of new artists were acquired in my role as co-ordinator of a graduate event that brings industry and young animation graduates together in the shared goal of solidifying a working relationship, as employer and employee.

> where a skill, task, area of work, undergoes continuous development, disappearance or replacement; where life experience cannot be based on stable expectations of the future and one's location in it. Under these circumstances, it is considered that a vital new ability must be developed: 'trainability', the ability to profit from continuous pedagogic re-formation and scope with the new requirements of 'work' and 'life' (59).

Bernstein also discusses the question of identity that according to him precedes trainability and is an essential requirement for learning (60). This is also discussed by Smits, Towers, Panayotidis and Lund and applies to both teachers in their role as educators and students in their role of learners (48). Bernstein's ideas on identity within the context of learning bring forth discussions of power relations and competence versus performance. He argues that identity is the dynamic interface within a social or collective base, not an individual isolated construction. It "arises out of a particular social order, through relations, support, mutual legitimization and finally through a negotiated collective purpose" (59). He argues that the "specialized recontextualizing field produces and reproduces imaginary concepts of 'work' and 'life' which abstract such experiences from the power relations of their lived condition and negate the possibilities of understanding and criticism" (59). This point of view suggests that some of the answers for producing embodied learning and identity may be found within an inquiry-based learning model that engages the students in a community-based collective effort that simulates a 'work' and 'life' experience. Some of the answers may lie in experiential learning approaches.

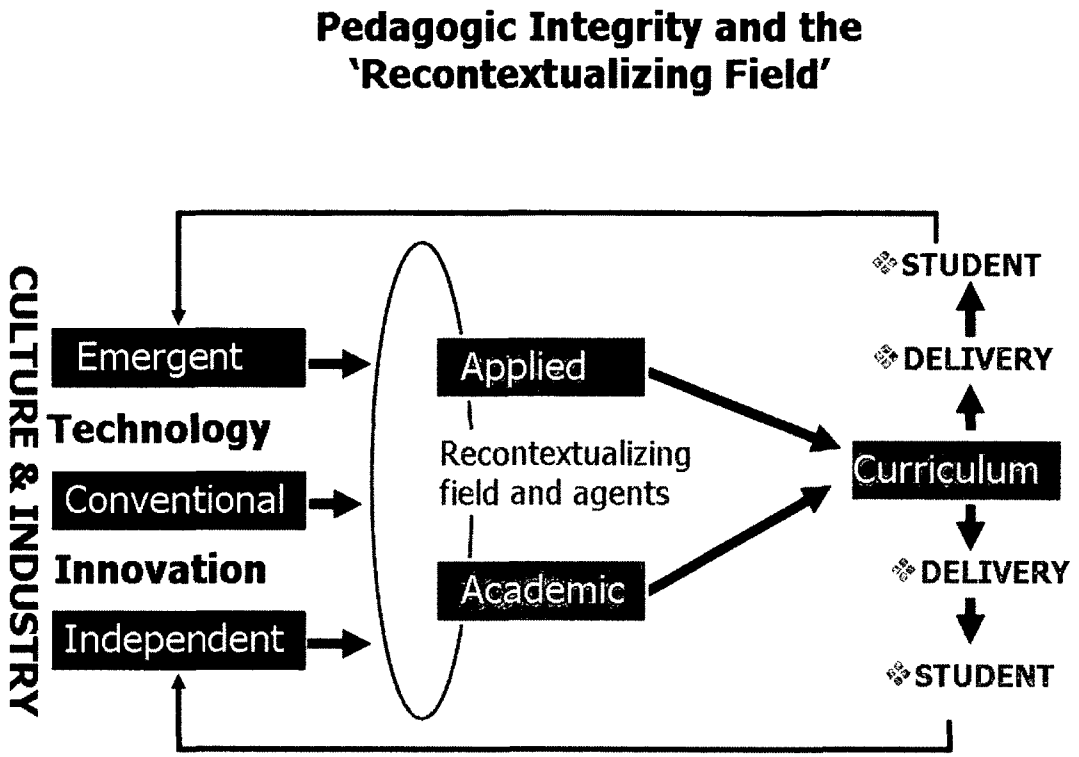

Figure 12. Author's representation of Bernstein's 'recontextualizing field'.

4.4.3 Sheridan Pedagogic Model: Critical Performances and Learning Outcomes

The Sheridan college animation program has an established culture and curriculum that is strongly influenced by its classical animation roots and the traditional/conventional animation industry. A 'primary critical performance statement' serves as a beacon for the program's focus and goal. This critical performance statement describes what a graduate will be able to do, the assets they are expected to have acquired after completing the program requirements. Sheridan's curriculum and its delivery have

been very successful in producing the desired results, thereby demonstrating considerable pedagogic integrity.

In Sheridan's case every course has a critical performance statementthat ties into the primary performance (Fig. 15). Pedagogic integrity starts here, with identifying whether the current status quo, the vision for the program, is represented in its individual courses and delivery. Animation programsshould attempt to address the needs of all the stakeholders: the students, the industry, the institution, and the faculty delivering the curriculum. These dynamic interests are in constant flux and require ongoing assessment. The review and revision of critical performances or program goals insures that the education is current, relevant and responsive to the stakeholders, especially the students who are the future practitioners of the medium.

A Sheridan graduate is expected to be competent in all aspects of animation production while excelling in a few. They have the ability to produce an independent film in three production models: 3D, 2D and stop motion animation (Fig. 13). Conventional industrial production does not necessarily demand that from an artist. They generally require and sometimes prefer that animation artists specialize in one function/role that can neatly fit into their production pipeline. Some faculty members prefer this idea of specialization and would like to see more of it built into the curriculum. However, because of 'phase driven' production models and temporary work contracts, this type of training may not be good for a student's long term success or continuous employment in the industry. The flexibility of a well-rounded generalist may be a better option.

A program should be clear in their claims of what the prospective student can expect to learn and do. Sheridan's program has been very successful in designing curriculum with integrity. It has a clear mandate and vision that targets specific industries and meets their expectations. At times though there is an underlying uneasiness felt by both students and teachers, which I believe is partly due to the 'recontextualizing field'.

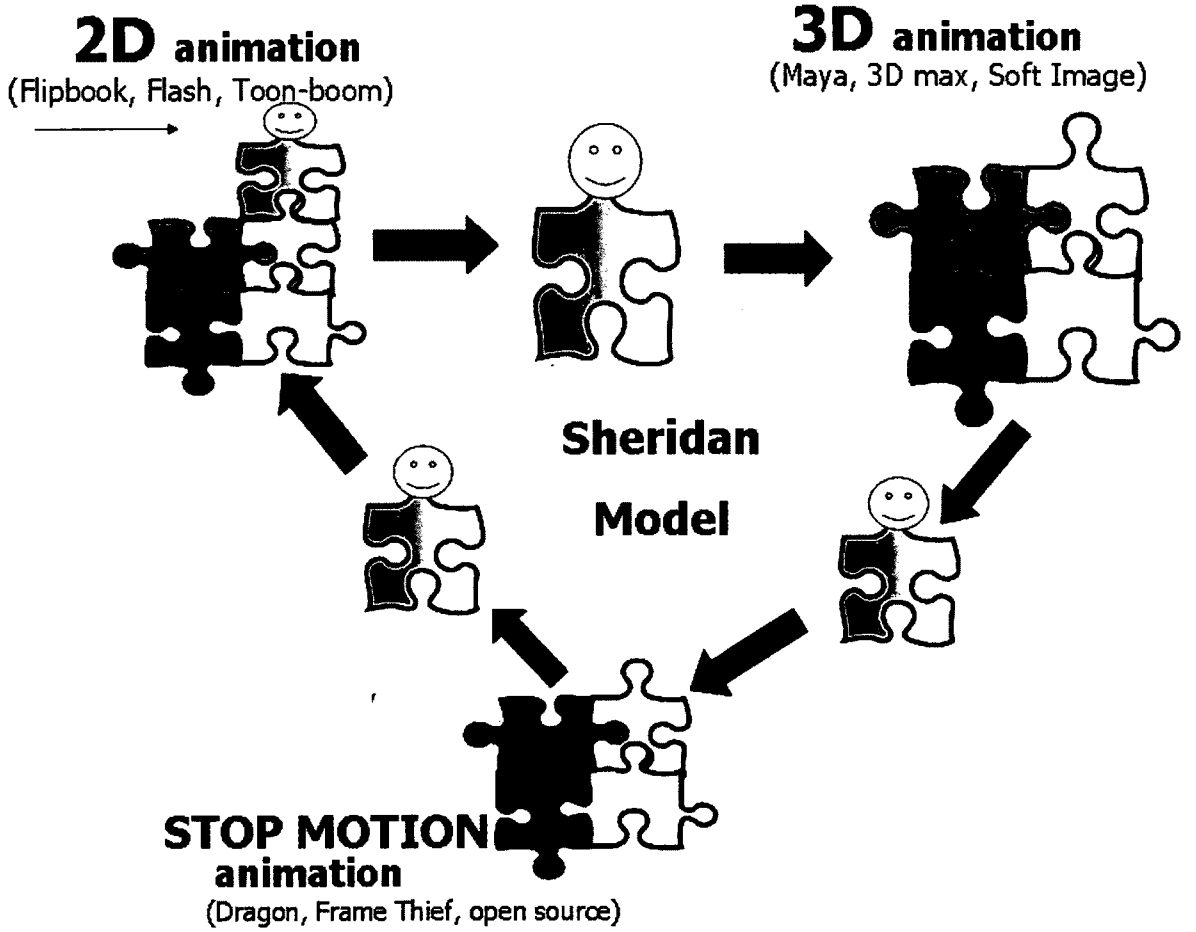

Figure 13. Sheridan College production models (conventional, industrial applications).

4.4.4 The Recontextualizing Field

After over 30 years of unparalleled national and international success, in 2005 the Sheridan animation program switched from diploma to a Bachelor of Applied Arts in Animation. For Ontario Institutions a degree needs to follow a specific formula from the Ontario Ministry of Education – taking years to develop and refine for approval. The 3 year diploma program was one of the first and most successful in North America. A curriculum that had established Sheridan as one of the top animation schools in the world. The move to a degree program met with some resistance from the faculty who were committed to the original diploma curriculum and believed it did the job exceptionally well. After extensive considerations and debate the core mandate and focus of the program has not changed much from the diploma to the degree. It is still production based with a focus on applied practice, and an augmented sensibility toward interdisciplinary inquiry based approaches.

Ultimately the objective has been to develop practitioners/artists that can easily insert themselves into the animation industry production pipelines and take their place as valuable individuals of the creative economy. Therefore, the curriculum design process is informed by contemporary industrial practices through research and Program Advisory Committee (PAC) meetings. It is important however to acknowledge that these experts rarely represent all sectors of an animation community and many times are chosen from conventional animation practices like the film and TV industries. Therefore, innovative and emergent use of the medium are rarely discussed or considered. This data along with the aid of subject experts – usually faculty members – is then used to design

the courses. These experts contribute to the overall understanding of what the program mandate should be, what courses should be offered. Critical performances are established, learning outcomes that address the critical performance are identified and assignments are designed to measure the learning taking place.

As in most cases the course is designed according to the institution's established templates, which are meant to provide a format that addresses approval expectations from a number of levels, but do not necessarily reflect or promote the delivery of dynamic, innovative embodied learning. In a practice based applied program the most important asset is professionals 'turned' teachers. Their ability to share real-world experience is fundamentally essential to student success. These teachers generally rearrange, add to, or omit parts of the course material and structure in favor of teaching the students 'how it really works out there'. The teaching strategy is related more to a situated learning model (Lave and Wenger) found in industry which at times is difficult to fit into the predesigned course breakdown because of an element of unpredictability that needs to exist in order to promote it.

The ministry formula demands that a student be required to complete a precise ratio of core animation courses to elective courses (liberal arts/humanities). Many animation students – both national and international – struggle with the reading and essay writing demands of the elective courses and inevitably do very badly in them. This has caused some concern because they need these to graduate. Students choose to concentrate on the core courses that build on their animation skills and the resultant portfolio that will get them the jobs they seek. This issue may be due to a disconnect

between the program entry qualifications and the degree program expectations.Through a portfolio review process, applicants who demonstrate exceptional drawing skills are almost guaranteed acceptance into the program.Generally these are creative visual artists whose other academic achievements may be fairly average, barely meeting the minimum requirements. This disconnect has the potential to create challenges to the integrity of the degree program.

The program's curriculum is stream basedand very effective. The first two years students receive a strong foundation of artistic skills and knowledge related to classical animation. One of the Ministry mandates is the placement of third year students in industry for 400 hours of experience, which has been an excellent addition to our program. In order to prepare the students for this, Sheridan's third year curriculum is designed to emulate industry practices by engaging students in the making of group films that last the entire year. This dynamic, hectic, sometimes chaotic animation production experience provides students with important, relevant, learning opportunities. Although, even a successful program like Sheridan's is affected by dichotomies that I believe exist in the program and should be part of the pedagogic discourse.

4.4.5 The Dichotomy Created by Stream Based Curriculum

There exists a dichotomous relationship between animation as a powerful holistic personal medium and the need to create curriculum that addresses animation's specific production phases meant to address industry expectations. The fact that these phases in many cases require the acquisition of similar knowledge and skills present a considerable quandary for the recontextalizing agents directed to create stream based curriculum. It is

difficult to pinpoint which course/courses should deliver a concept or theory – or parts of it. There are overlapping knowledge areas like composition, structure, perspective, design, form, volume, lighting, and painting that are evaluated many times over (Fig. 14). The level of the material: introduction, intermediate, and advanced is also problematic. It is challenging if not impossible for a teacher to hold back when students demand more. This causes unwanted infringement and overlap of course content which is an acceptable teaching strategy in the real world but somewhat unacceptable within institutional curriculum design and delivery.

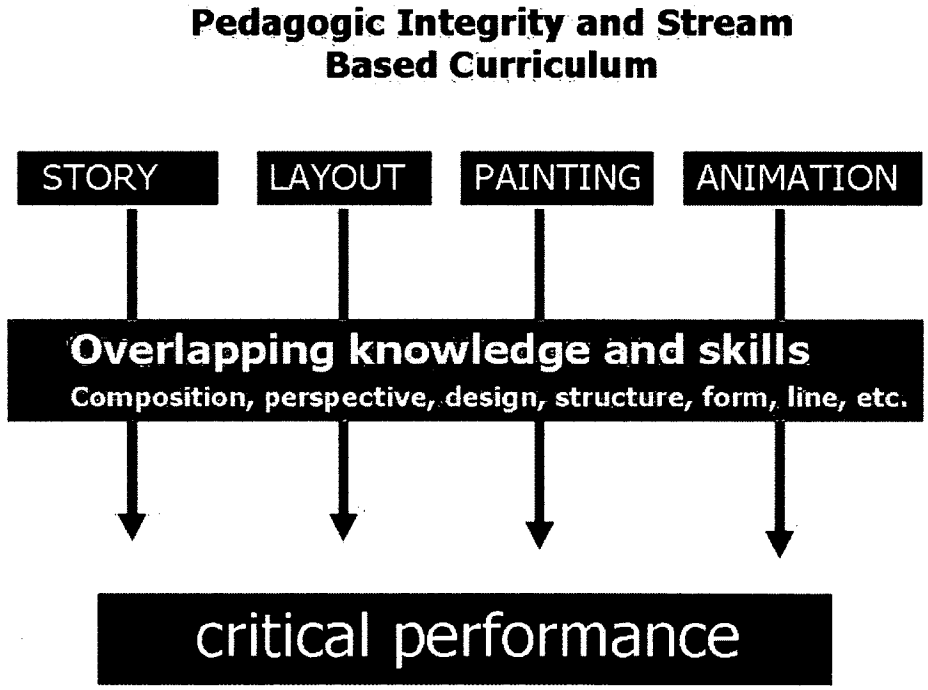

Figure 14. Example of stream based curriculum.

I am not convinced that the idea of graduated learning, building on assumed prior learning works for most students. In the animation industry - where we can find the concept of situated learning (Lave & Wenger) - one learns to perfect his/her skills through repetition, revision, and more repetition. The segregation of learning into streams (knowledge areas) has a tendency to leave students with the responsibilities of discerning how these aspects of production - concept art, storyboard, design, layout, animation, painting, compositing, and editing - work synergistically within the production of an animated film. Although in Sheridan's case students do make a complete short film in their 3rd and 4th years.

There is an argument to be made for a more unstructured flexible curriculum where students are challenged to build on the prior learning they acknowledge, as opposed to learning they are assumed to have because of courses they have completed. In addition there is also a need to allow for deliverables that inspire and motivate emergent uses of the medium. Within many animation programs the students are expected to acquire knowledge and skills through deliverables that address specific learning outcomes and resultant critical performance. This pedagogic strategy presents a stumbling block to the exploration of the emergent use of the medium. Part of the answer may lie in designing cross disciplinary group work that promotes exploration and innovation.

4.4.6 The Dichotomy Created by Group-work Curriculum

Animation is a team sport. This is a statement shared by many in the animation community who support group films as an effective teaching method. Group films can be

the best education and simultaneously the worst education. The dichotomy is evident when we examine the individual student's critical performance and learning outcomes within this approach. It offers students the undisputed benefit of animation production realities and simultaneously provides a forum within which the full acquisition of the learning outcomes are greatly diminished (Fig. 15).

Generally students gravitate toward the path of least resistance, what they enjoy doing most, what they are good at and what will allow them to pass the course but not necessarily learn all the outcomes. This is further complicated by a tendency to simulate industry production too closely and break into specialized departments that exclude students from experiencing the whole process. There is also the issue of available workload (2 to 4 minute films for 10 to 12 students). As a consequence of these realities some students may not be fully engaged in the project, thereby forgoing the opportunity to learn important skills, learning outcomes that correspond to particular phases of the production.

The group film provides an exceptional experience. Learning how to effectively function within a collective creative environment is essential to a student's success. The skills needed in order to do this are difficult to teach within traditional structured curriculum and even harder for the students to obtain. As in real world situations a level of uncertainty needs to exist in order to generate the challenges that will inspire solutions student will learn from – as in addressing creative differences and opinions. Students have personal preferences, artistic tendencies, and personality traits that may conflict and differ from other group members. Everyone is challenged in their own way. The ability to

accept other artistic views and to the ability to communicate a personal unique vision in a constructive intelligent manner are key components of becoming a professional.

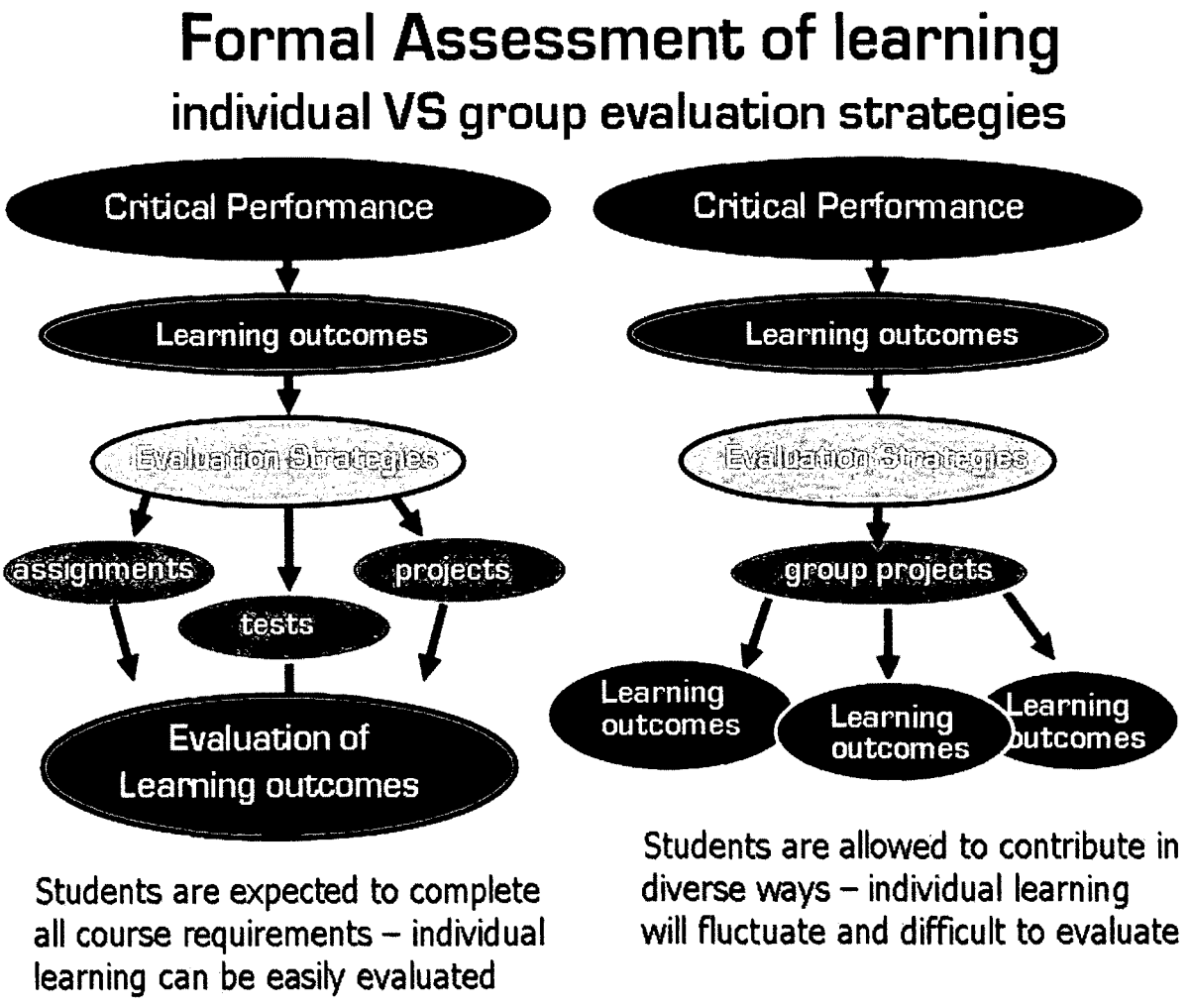

Figure 15. Existing pedagogic model.

Chapter Five

Conclusion and Future Considerations

The GTAAC studied in this project is a glocal community of practice consisting of four sectors: industrial, independent, emergent and educational. My insider knowledgeas an a/r/tographer (artist, researcher, and teacher) has allowed me to look at the community through a number of critical lenses. My inquiry involved a constructivist grounded theory approach within the context of an ethnographic study of how digital technology affected the community over the last twenty years.

The project has provided revealing insights into the phoenix like rebirth of the medium and the evolution of its cultural, industrial and educational purpose and role.In the last two decades digital technology has democratized the animation medium and has made it a production tool accessible to all. By simplifying animation production the new digital tools have unleashed a collective creative potential from all members of society thereby increasing the cultural production of narrative artifacts that challenge and disrupt the current norms and subvert the status quo. It has interrupted the traditional production and distribution power structures and broken down the hierarchy within the practice of animation, disrupting the line between producer and distributor, consumer and broadcaster, expert and layman, amateur and professional.

Practitioners have recognized the power of the technology to validate animation as the decisive medium for the unlimited expression of human imagination, a powerful extension of it. The animation medium has transcended its classical roots and is no longer being looked at through the same paradigms that have dictated its production and

consumption in the past. Because of the digital tools, it is now an evolving medium looking for a definition. In chapter two I suggested a broad contemporary definition of animation, '*Animation is the cognitive fabrication of the illusion of motion as an extension of human imagination*'. This definition is meant to acknowledge animation's quintessence but places the emphasis on its seemingly unlimited power to manifest human imagination. This ability drives the medium's pervasive nature and positions it as an emergent communication and production phenomenon that is establishing itself within many cultural narratives. I propose that its proliferation is due, using McLuhan's terms, to its capacity to be both a 'hot' and 'cold' medium (22-32). Additionally, not only has it become a vital extension of the human imagination but it also challenges it in ways the human mind has never before experienced. Many GTAAC members interviewed believe that the technology provides an exciting opportunity to manifest one's imagination while simultaneously injecting an intimidating mystifying challenge to exploit its alluring potential. Moving image industries like gaming and film are no longer limited by the paradigm of the impossible or probable. Ideas themselves, or at least our perception of the potential inherent in ideas, have been empowered.

It is within this context of creative empowerment and contemporary discourses that the GTAAC has contributed to animation's worldwide cultural proliferation.Because of communication technology like the internet these animation practitioners have become prolific global carriers and infusers of Canadian sensibilities. The GTAAC is now a glocal community that is shaping and being shaped by a creative economy within which they have assumed the unintentional role of recontextualizing agents of screen culture.

The focus of industrial artists is to remain employable within the conventional production pipelines. These – especially TV productions – produce hundreds of hours of cultural content consumed by all members of society, young and old. Even postmodernist sensibilities are addressed, as demonstrated by some of the edgy and bizarre series[77] available on stations like G4. Although these artistslabor long hoursand are proud of the work they do within these large production teams, it seemsthat they don't see themselves in the larger context of cultural producers or affecting culture in any meaningful way. The roles of producers and directors are alsodecisively defined and hijacked by the industrial consumerism mindset of production and profit. It seems that in many cases the artists are not personally invested in the production and by extension ignore any meaningful discernment of their cultural contributions.

Unlike the uncertainty experienced in the early years of the digital shift, there is now a sense of prosperity building up in the community, an excitement brought on by the digital technology used in everyday practice. The frustration felt by the artists, and to some extent management, has fermented in creative applications of the new tools resulting in exceptional cultural artifacts. These serve to motivate similar productions and ultimately alter the paradigm of 'old school' quality verses 'new school' fad/quantity, thereby resulting in a paradigm based on the synergistic relationship between the two.

This synthesis with technology should not be at the expense of leaving the classical skill sets and practices behind. Artists are embracing the new tools as part of

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[77]Superjail (2007) www.youtube.com/watch?v=uuszUxR0-2k , Renegade Angel (2007) www.youtube.com/watch?v=sP0xj0fs3rE, Tim and Eric Awesome show (2007) www.youtube.com/watch?v=VQKD-xd3mJo

their arsenal of creative devices in order to both express their artistic voice and address technical and industrial demands. The successful implementation of new technology within both traditional and emergent production models speaks to the benefits of concepts like LPP, trainability, and the recontextualization of skills within innovative contemporary digital pipelines and processes.

In the independent sector, digital technology has been a difficult reality to leverage and manage.In the past this technology was much more expensive, which made it easier for organizations like TAIS to attract artists to their production facilities equipped with the latest digital tools. Now these have become more affordable to indie animation artists who no longer feel that need to make use of resources offered by art organizations. As a result, these organizations need to rethink the advantages that the production facilities offer their members. It has become necessary to provide the artists a technology that is either financially out of their reach or unique in some way, emergent, and/or something they would not have themselves. In many cases, as demonstrated by the Painters Eleven Exhibition, artists are still attracted to the specific aesthetic and tactility provided by old film technology that is no longer easily available. One reason for this attraction may be that the software and hardware like drawing tablets or centiq,[78] produce a homogenizing effect. The digital tools have a tendency to seduce and corrupt artistic vision. They tempt the artist to adopt the technology's facile image creating power to produce interesting homogenic artifacts. The artist's struggle becomes one of achieving a unique individual style through the innovative use of the digital tools.

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[78]Centiq interactive pen displays, http://www.wacom.com/en/Products/Cintiq.aspx .

With the emerging stereoscopic and touch-screen technology and now the affordable SANDDE[79] from the NFB there is certainly room for innovative approaches. Unfortunately, the arts council grants[80] meant to nurture the media arts communities in most cases place a high priority on new technology at the expense of supporting old technology or providing dedicated space. A prime example of this is stop motion animation which would need additional studio space for both workshops and shooting areas fully equipped with a Motion Control System[81] (MCL) and a professional high end still camera. This would certainly attract the current unsupported rise of stop motion animation artists.

Supporting old technology is important according to international artists like Iain Gardner[82] and Mohamed Ghazala[83] and, when it comes to support for the arts, Canadian arts councils do a terrific job. The peer assessment committees (PAC) that evaluate the grant applications face very difficult decisions. They are placed in the position of evaluating the grant applications knowing full well that the technologies associated with the production and dissemination of media artworks is in constant flux. They are faced with the challenging task of identifying and somehow quantifying the value of the

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[79] "SANDDE is an immersive, stereo-3D animation tool that allows you to create 3D content with all the freedom, flexibility, and graphic delights of traditional hand-drawn animation. You draw with a Wand (a motion-tracking device), and the drawing floats in the space in front of you. It takes form as a real-time trace of your movements." $8,000 to $10,000 http://www.sandde.com/publicpages/whatIs/draw ,http://www.nfb.ca/film/sandde/ .

[80] Individual artist grants are awarded in all artistic disciplines and to artists at all levels of development. Programs support individual artists at three level categories "emerging", "mid-career" and "established". http://www.canadacouncil.ca/mediaarts/, http://www.ontarioartist.ca/en/media_new_assn.htm .

[81] MCL allow the artist to produce and reproduce elaborate camera moves and advanced cinematography.

[82] Scottish filmmaker, winner of best animated short at the 2011 Toronto Worldwide Short Film Festival.

[83] Asifa Africa representative and animation teacher at the Fine Arts Faculty, Minia University, Egypt - www.Ghazala.net

technologies associated with the different media art mediums and practices, in that way making equitable recommendations. This process seems to be driven by a mandate to stimulate the media art communities through the introduction of new and emergent cutting edge technology. This approach is inherently problematic and has a somewhat alienating effect on a large part of the art community they are trying to serve.

One problem caused by this approach is that old technology used by many artists is left behind without any support and the new technology rarely gets the support it needs until it is too late. The learning curves are supportedand the knowledge is shared through situated learning (LPP) opportunities and just when you think you "got it"[84] something new comes along. To make the problem worse – and this is an issue with media production in general – art organizations choose and promote different technology. A simple example is Mac versus PC software and hardware. Communication between the two platforms is better than ever before but the stigma and perception by the artists is not. Many artists are confused and outright afraid of the technical aspects of creating and archiving their work digitally. This uneasiness leads to an uncertainty that builds anxiety throughout fundamental aspects of the creative process. When drawing on paper or moving a puppet the work is tangible, it is what it is, there are no hidden settings, corrupt hard drives, or faulty software to worry about. In an ideal situation practitioners would be able to practice within a community where technology is consistent and does not present an obstacle but an enhancement. A sustained study using an action research approach could be initiated to analyze, identify and test some solutions (Fig. 16).

[84]This is a feeling shared by practitioners from all sectors, the pressure to move on to the next technology.

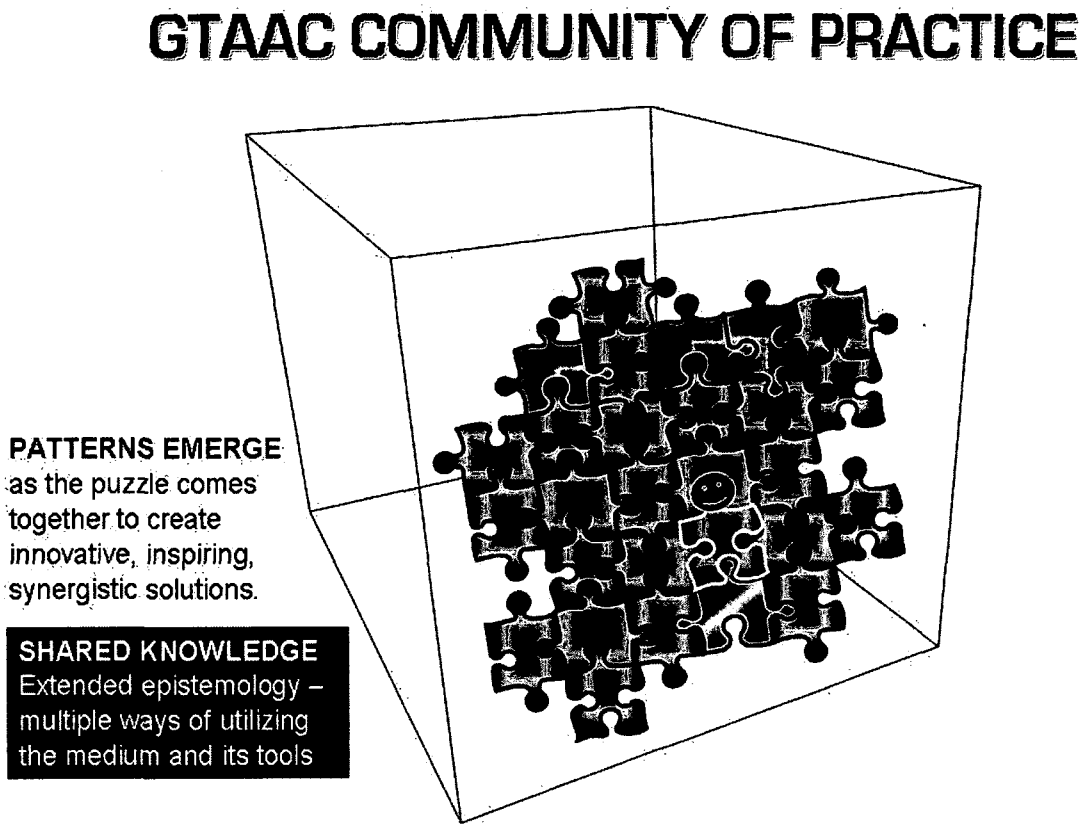

Figure 16. Synergistic relationship with technology.

Practitioners in all sectors of the community share this anxiety, and it is especially evident in the competitive industrial sector where the pressure to stay current with the digital tools, communication technology,[85] and social networking[86] is not an option. Whether it is design, storyboarding, or background painting, the constant need to

[85]Web based technology like Skype for both visual and audio correspondence. FTP sites and drop boxes for large file exchange and virtual project management.

[86]A popular professional social network is Linkedin - http://www.linkedin.com/home. Here practitioners of all levels, emergent, mid-career and established professionals maintain a profile. They can also start and belong to groups. Many of these related to job opportunities and cooperative projects JOBS IN GAMES, Flash Animation Professionals Network.

recontextualize one's creative skill to the studio's tech requirements is a matter of survival. Studios are constantly upgrading to new software and hardware that make them more competitive. Though quality and product distinctiveness is important, with the homogenization of animated products, it usually comes down to being competitive by bringing down production cost. The smaller budgets are constantly forcing companies to find cheaper and better technology to streamline their pipeline and produce quality animation faster. Generally only a few companies invest in training so the onus is on the practitioners to learn the new technology through on the job situated learning opportunities, between contract jobs, or in the evenings while trying to meet their work quota. These artists can no longer be restricted to recontextualizing their skills and knowledge within conventional animation productions. Not only does it limit their ability to make a living but it also deprives society of the full effect of their creative, innovative contributions to other narratives.

It is important to mention that even though some of the practitioners are peripherally active in other industries, many within this community of practice are not aware of emergent employment opportunities that have been generated by the medium's digital tools. There seems to be a disconnection between the supply and demand of animation talent. The use of animation as a communicative and enhancing visual medium has been considered and adopted within many narratives, production pipelines and project workflow. In the toy industry the medium provides the means to pre-visualize and market a toy as Fisher Price has done, or as Ganz has used it, for games designs that are extensions of the toys or stand alone products. These companies are now hiring

animation graduates who both fill their current needs and provide a fresh point of view. This is where the concept of LPP becomes most important and yields dynamic results. A worthy goal for the community would be to create forums for synergistic communication that provide arenas where all members of the community could discuss initiatives, exchange thoughts, and offer projects. This is certainly starting to happen with organizations like CASO, Ontario Interactive, TAIS and other initiatives like social media groups on Facebook and LinkedIn, or the new gaming group started by Steve Engle from the University of Toronto.

The GTAAC seems to be a well-informed techno savvy community that has passed its storming phase and is now normalized and effectively engaging technology. It is important to acknowledge though that the acceptance and conversion to digital technology within the practice of many community members is still forming. Most of the artists have been trained with traditional tools and many of them are still resisting the digital tools and aesthetics. There is also, however, a new generation of artists that are completely immersed in the digital technology and their practice has fully developed within it. The worth of their contributions to the community's collective creativity is still to be answered but one thing is certain: if the community wants to havea greater effect within the new global creative economy its practitioners need to get rid of all existing paradigms and assume that the digital canvas is always white and ready for a newinspired vision to come alive, one where time and space does not exist and the only thing holding the medium back is their own imagination.

5.1 Liminal Spaces and Virtual Interruption

When merged with gaming or interactive technologies and infused with AI, computer generated animation produces a 'liminal space' – a space between spaces, between worlds, on the threshold of two realities. CGA is an innately interruptive medium. Its ability to seamlessly mimic reality manipulates, undermines and challenges our perception of it.

Virtual environments created through the use of animation software and processes are intrinsically immersive in nature as demonstrated by the video game interface. It is a great example of metaxis, reality and the imagined. While playing a video game, boundaries between the real and the virtual world of the game are slowly dissolved and erased. Serious gamers find themselves between realities, in a constant flux between two worlds: that of the tangible tactile world of the couch and game control, and that of the virtual experience that demands their total cognitive attention including reasoning, intuition, and perception. This is the liminal space where the player resides.

One area deserving of further studies is the fusion of liminality and CGA as a concept – within the gaming narrative – used to explore and investigate social and cultural phenomena such as the transgeographical space, transcultural space, transgendered space and the interruption of authority. I am calling these spaces, 'Virtual Interruptive Liminal Spaces' (VILS). Second Life produces VILS where gender, race, sexual orientation, identities, human agency and the preconceptions that they invoke are interrupted and subverted, forcing reflection and the negotiation of new paradigms. In this virtual worldwhere we live out alternate identities, gendered spaces can and are

interrupted by signs, non-gendered objects and avatars that allow us to transcend race, culture and gender barriers. The game frees us from the ritualistic restrictive routines of the real world and allows us to disrupt them through an adopted virtual identity and agency. Here the laws of nature and man are vague and relative – the virtual rehearsal of life is an anonymous experience that fulfills a need and want.

The virtual communities in Second Life promote and nurture cognitive disruption. They are worlds where one could virtually explore concepts like social change, gender performance and ritualistic performivity, and formations of identity through interruptive performance in public spaces and public art. These are all aspects of the virtual worlds made possible by the CGA medium and require further inquiry and study.

5.2 Pedagogic Insights

As stated earlieranimation isnow a visual communication language that has surpassed its historical roots and paradigm of two-dimensional cartoons and its full potential is yet to be revealed. A worthy goal for educational institutions would be to design a pedagogic model that would unleash animation's potential as a socio-cultural and industrial phenomenon to provide innovative pedagogic arenas that in addition to traditional narrative cinema production would inspire inquiry and exploration of emergent uses for the medium – freedom within a structured model that would provide both creative freedom and accountability from both students and teachers.

There is a need to develop a model that better reflects the transformation that will continue to take place in the digital future.This may be achieved by providing creative interdisciplinary opportunities where teams of artists are encouraged to fully engage the

process and draw upon their accumulated knowledge and skills in order to communicate a narrative, overcome a challenge, or imagine a futuristic vision that will lead to innovation. In these collective creative arenas where critical inquiry is allowed to flourish, students are inspired to pursue their personal desires thereby motivating the manifestation of individual vision.

Identifying what constitutes the ideal animation or media graduate according to how well they are prepared to fit into a specific industry production is an old paradigm. The acquisition of artistic skills (psychomotor domain) and knowledge (cognitive domain) are standard desired outcomes, but students need to be cognizant of the fact that they are part of a much larger animation narrative, one that includes a multitude of disciplines and fields within diversified communities of practice. These relationships within creative communities are particularly dynamic and challenging. The students' long-term success hinges on their ability to communicate, interact, and collaborate with these communities. I agree with Gradle's suggestion that there is room for a 'broader interpretation' of Western culture's art curriculum. I agree that art education should be a "program of study which provides both visual and verbal languages as tools, and simultaneously develops the interpersonal skills necessary to address issues of ultimate concern through art making and viewing" (73).

Identifying major trends within industrial, independent, emergent, and educational contexts is both possible and necessary but in addition to that institutions, especially applied programs, should rethink the role of the animation medium itself, possibly looking at some of McLuhan's ideas on "the medium is the message". Animation

practices like scratch on film, pixilation, or instillations are rarely taught or even encouraged in most animation programs, the exception being visual or media art programs where animation is one of the many media introduced for making art as an extension of one's artistic voice.[87] Stop motion animation seems to be experiencing a revival in feature and short film productions. This is increasingly evident in the young animators who are rediscovering it for the first time.[88]

There is a synergy created by the synthesis of traditional practices and new digital technology. Photoshop is used to manipulate images captured for stop motion films and matte painting techniques are used for CG films in the same way as live action. Learning to make films with the tools is an important goal but creative collaboration with others is just as important. Effective creative collaboration is not so much a concept that we can think about with our minds but rather a concept that needs to be experienced to truly understand and internalize the learning. The resultant embodied learning prepares the students for a career in the industry and will sustain development long after they graduate. In 2004 Eppert stated that "Ultimately the goal of learning is not the acquisition of subject matter but rather a lifelong struggle with the question of how to live in the world" (Gradle 83). The foundation of the medium's exciting future lies in the education and formation of promising practitioners for a dynamic digital world.

I propose that one way to achieve this is through a holistic pedagogic model (Fig. 17) that supports critical inquiry through clarity of purpose, a sense of stability, equality

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[87] As demonstrated by the TAIS artists mentioned earlier.

[88] At Sheridan College the number of graduates making a stop motion film has consistently increased over the last four years.

and fairness. Within an interdisciplinary environment – inspired by PAC's from all sectors – that promotes the development of the individual's identity and artistic voice while simultaneously mentoring the challenges of the collective effort students need clarity of process and direction. Students need to feel that there is a system in place to deal with their concerns that is flexible enough to become invisible and non-intrusive. It is imperative that students develop their own production process but even more important is the ability to work collaboratively within it by developing relationships that will facilitate the circulation and the discussion of ideas, beliefs, and values. "This is the sort of multiple origins, multiple outcomes thinking that brings us closer to the heart of art education" (Gradle 78).

As an educator for over fifteen years I have concluded that animation students internalize intended learning outcomes better through simulated real world group experiences. Similar sentiments are expressed by Lund in his paper "Provoking and being Provoked by Embodied Qualities of Learning: Listening, Speaking, Seeing, and Feeling (Trough) Inquiry in Teacher Education". He says students should be "invited into the challenging role of directing their own education. Woven into this approach is a strong thread of self reflection that runs throughout" (Lund et al. 66). I therefore propose two approaches that may offer favorable results. The first is to allow students to research and develop their own independent project which may be inspired by alternative narratives and structures. It may be an interdisciplinary work with the medium playing a major role, possibly as the language being used to communicate the concepts or ideas. The second is to allow students to design alternative production pipelines inspired by emerging digital

tools and apply it to a unique flexible project meant to generate innovative results. Both approaches would require a focused effort, a pliable plan, with malleable goals meant to generate a desired result. The groups would develop communication forums such as collaborative blogs and wikis[89] where creative efforts are discussed and debated in both planned meetings and non-temporal online forums. Students are encouraged to form social structures that make use of the concept of LPP and imitate senior/junior, master/apprentice, and theoldtimers/newbie relationships of industry.

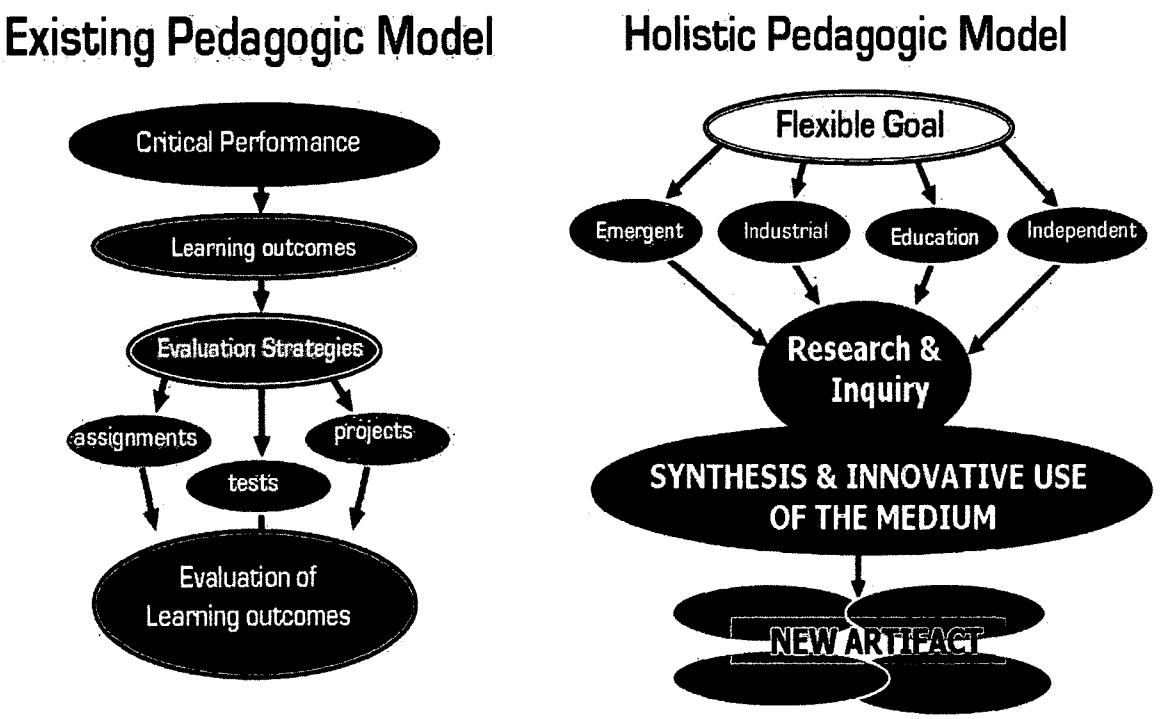


Figure 17. Proposed holistic interdisciplinary approach.

[89]Wikis and blogs are interactive websites created to facilitate ongoing group discussions regardless of time and place.

There is a real sense of something great but intangible happening within these cooperative structures and processes. Something akin to what Gradle calls 'spiritual ecology', finding the heart of the animation process,"something that can sustain the whole through its important discovery that it has a reason for being which far surpasses a mechanical functionality (72). Collaborative projects offer this "reason for being" that Gradle speaks about. The shared vision that develops holds the many phenomenological coils together in the student's personal quest for identity within a living breathing community. Everyone benefits by the synergy created through the new dynamic relationships that inspires innovation and possibly re-establishes the heart of the art of animation.

5.3 Future Considerations for the GTAAC

The one thing that all sectors of the animation community have in common are the creative people, the animation artists who practice within it. Many practitioners of this microcosm live an itinerant lifestyle moving from company to company, project to project, pipeline to pipeline from conventional to emergent industries like gaming, pre-visualization and mind controlled technology. Most are professionals contracted to work on projects which may be anything from one week to one year long. With the constant surge of new technology savvy graduates coming into the community from colleges like Sheridan and Seneca there is a sense that the local work opportunities are saturated. This has led many of them to search out employment opportunities elsewhere within the larger macrocosm of national and international productions. These have been significantly

streamlined and simplified by the new software, hardware, and communication technology.

At the 2011 Sheridan convocation, speaker Kristine Stewart stated that in order to succeed in the current media industries you need two essential qualities. You need to be open and inquisitive. It is very important to be open to new technology and be inquisitive as to how it can benefit one's practice and professional goals. The concept of situated learning, LPP, training, and the process of recontextualizing skills and knowledge areas are no longer held back by obstacles of the physical workspace. Social media forums, online art communities and the global marketplace have created a virtual situated learning environment accessible to practitioners from all sectors of the community. Technology plays a number of key roles in these virtual working relationships where global communities meet and work. It is both the production tool used to produce the content of the activity, and the context within which the activity is facilitated. Current GTAAC productions are composed of many national and international artists that in some cases form a large percentage of the production teams.[90] Even though at times the average practitioner may not find local employment within a physical environment, the global possibilities are many. I believe these virtual working relationships have favored the coveted rich talent base in GTAAC.

The future of the animation medium lies in its ability to use technology to extend and concretize human thought and imagination.We can project ourselves into the future or revisit the past, exploring alternative versions of both. It undermines our accepted

[90]Cookie Jar Entertainment, www.thecookiejarcompany.com, and Nelvana, www.nelvana.com, have both used this model.

notions of existence and challenges our understanding of the world around us. It can be infused with artificial intelligence and create realities that engage audiences and distort truths. Through its unconstrained and mimetic power to generate anything imaginable: real, surreal, abstract, avant-garde, or traditional, it has become one of the most powerful media for contemporary cultural production. Its future is secure and coupled with the prospect of a 'quantum cinema'or some similar concept. CGA is also positioned to be the most dynamic media of the new cyber-cinema, the future of which depends on its ability to satisfy an ever changing cyber-audience whose needs and desires are being constantly reshaped by digital technology.

There is a desire, a need for society to accept and engage with technology and have it augment our reality, our abilities as humans. The human imagination will be leading the way in the proliferation of these posthumanistic aesthetics. The thought that one day one could conceivably receive and create narratives directly from the human neuro-system is a fantastical idea and the current trajectory seems to suggest that it is a plausible goal through the undisputed manifesting power of CGA. There is a real sense that the GTAAC understands and believes in the empowerment that technology has brought to the medium and, by extension, their practice. There is a belief that the medium needs to be redefined and utilized as a new emergent communication language positioned to meet the needs and visions of a dynamic GTAAC, a community that is willing to evolve its narrative within digital contemporary and posthuman narratives, while persistently determined to hang on to traditional practices that have made it a valuable resource for the global moving picture industry (Fig. 18).

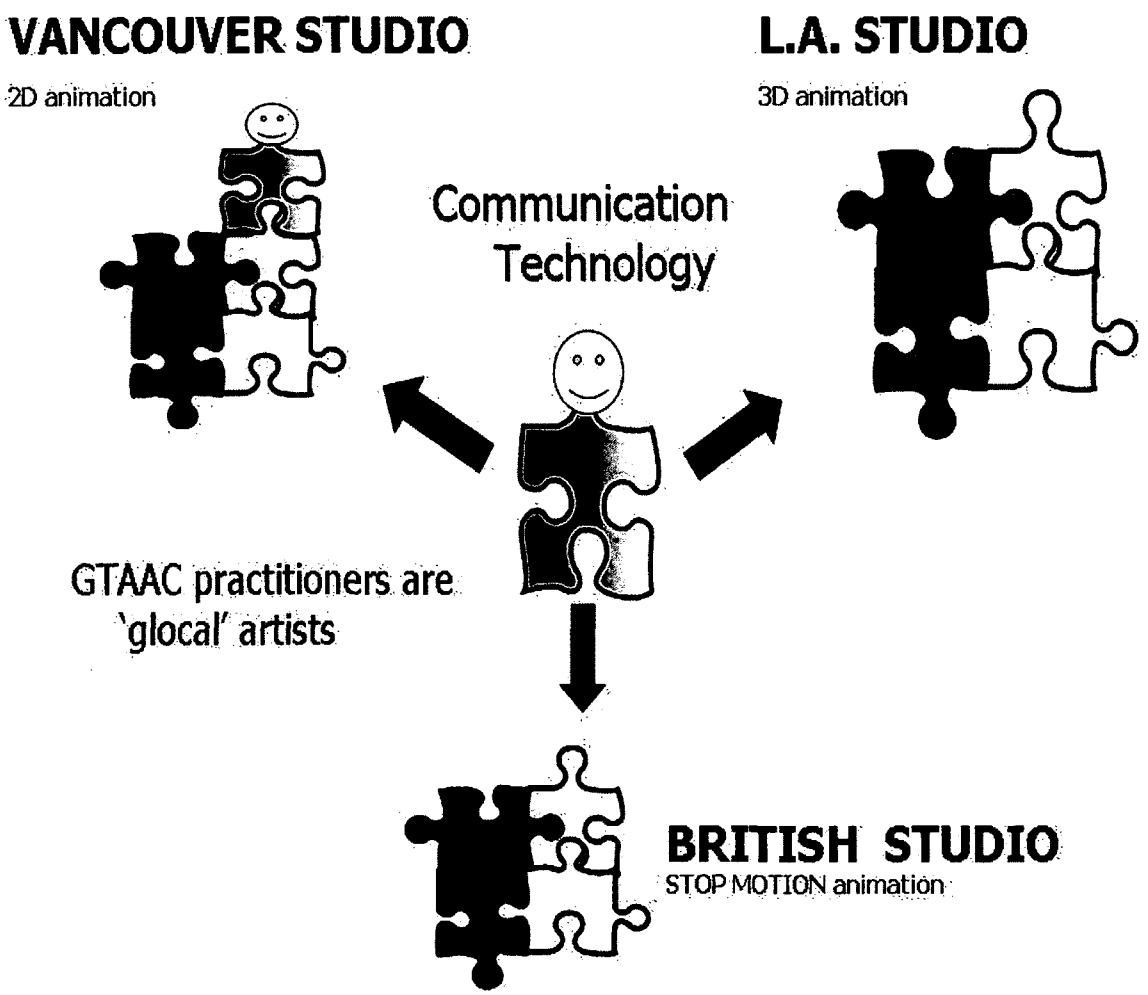


Figure 18. Technology and the GTAAC. Practitioners are active in both National and international animation productions.

Appendix A

Interview Core Questions

1. How have the digital tools affected your production pipeline?
    a. What has been the most challenging aspect of implementing these tools?
    b. What have been the creative/financial benefits to implementing these tools?
2. How have your hiring practices changed over the last 10 years?
    a. What is the nature of current job offers, contract vs. full time?
    b. What are employer's expectations for newcomers into the Industry?
3. Which skills and knowledge areas have/will become the most valuable and why?
    a. How important are traditional animation skills VS. knowledge of digital tools (drawing etc.) in today job market?
    b. What kind of changes to educational animation programs would most effectively address the medium's potential and future needs of the industry?
4. How do you see the animation industry/practice changing in the near future?
    a. Independent productions vs. Industrial productions?
    b. What role will digital technology play in this change?
5. How would you describe animation's cultural impact in the last 15 to 20 years?
    a. What is the reason for its cultural proliferation and ubiquitousness?
    b. Which industries, fields, or communities of practice have been affected?
6. How has the nature of your work and interests changed over the last 10 years?
    a. What have been your major influences?

b. How has the transition from hand generated to computer generated animation affected your work?

c. Where do you see yourself in the next ten years?

7. Have we lost anything with the proliferation of digital technology in the animation field?

8. How would you describe the Greater Toronto Area Animation Community?

a. What would you say is its greatest strength or asset?

b. What aspects of the community would you like to see developed?

This visual was produced by Sheridan students during their group film production.

Appendix B

Key Informants List

Informants are listed by last name, first name, residence, type of interview and sector.

Residence: Greater Toronto Area Animation Community (GTAAC) – other communities are listed by their full name.

Data collection abbreviations: Video Interview (VI), Audio Interview (AI), Misc. Correspondence (MC)

Sector: Industrial, Emergent, Independent, Educational – Where possible the sectors are listed from most to least applicable (belong to or engage with) – (*) designates that they have been active in the sector at some point in their career, but currently are inactive.

Ahn, Song Ho (GTAAC, VI, AI). Emergent, Industrial, Education (Sheridan Visualization Design Institute VDI). Personal interview. 23 June 2010.

Ainslié, Mark (GTAAC, VI). Industrial (Director of Creative Operations Guru Studio). Personal interview. 5 July 2010.

Anderson, Phil (USA, VI). Education (University of Indianapolis Prof.), Emergent. Personal interview. 11 July 2009.

Ashworth, Willie (GTAAC, VI, MC). Industrial, Education (Max the Mutt), Independent. Personal interview. 12 Aug. 2010.

Audet, Dan (GTAAC, VI). Independent, Emergent, Industrial. Personal interview. 13 Nov. 2009.

Avni, Shira (Canada, VI, MC). Education (Concordia University Prof.), Independent (NFB). Personal interview. 18 Oct. 2009.

Avolio, Enzo (GTAAC, AI, MC). Industrial, Education (Sheridan), Independent. Personal interview. 25 Jan. 2010

Azizan, Tarmizi A. (Malaysia, MC). Education (University Malaysia Kelantan, Head of design & Creative Technology Department). Personal interview. 20 Mar. 2011.

Balasubramanian, Maridass (GTA, AI). Education (UofT, Microcellular Research Lab). Personal interview. 28 May 2010.

Barna, Glenn (GTAAC, VI). Industrial (music), Independent. Personal interview. 7 July 2010.

Beiman, Nancy (GTAAC, VI, AI, MC). Education (Sheridan Prof.), Industrial*, Independent (Author). Personal interview. 17 Nov. 2009.

Blanchet Claire. (Canada). Independent. Panel discussion. 17 Oct. 2009.

Caswell, James (GTAAC, VI, AI, MC). Industrial, Education (Sheridan). Personal interview. 9 Apr. 2010.

Caple, Scott (GTAAC, AI, MC). Industrial, Education (Sheridan). Personal interview. 10 Apr. 2011.

Chadwick, Glenn (GTAAC, AI, MC). Education(Sheridan/Seneca), Independent (painter), Industrial*. Personal interview. 29 June 2011.

Chartrand, Martine (Canada, VI). Independent (NFB). Personal interview. 18 Oct 2009.

Chiu, Bobby (GTAAC, MC). Industrial, Independent, Education (indie initiatives). Personal interview. 20 Oct. 2011.

Colder, Dave (GTAAC, VI). Industrial (Guru Studio), Independent. Personal interview. 5 July 2010.

DaCosta, Charles (USA, VI, MC). Education (Savannah College Prof.), Independent. Personal Interview. 12 July 2009.

Davies, Trevor (GTAAC, VI, AI, MC). Industrial, Education (Sheridan), Independent. Personal interview. 12 Nov. 2009.

Dufour-Laperrière, Félix (Montreal, VI). Independent. Personal interview. 18 Nov. 2009.

Elliott, George (GTAAC, VI). Industrial (Founder of Elliott Animation, Fresh TV). Personal Interview. 10 June 2010.

Estey, Ron (GTAAC, VI). Industrial (Managing Director of Social Game Universe), Independent*, Emergent. Personal interview. 16 July 2010.

Falcone, Frank (GTAAC, VI, MC). Industrial (President of Guru Studio). Personal interview. 5 July 2010.

Faier, Ken (GTAAC, Vancouver, VI). Industrial (President of Nerd Corps), Emergent. Personal interview. 19 May 2010.

Feldman, Carla (GTAAC, AI). Industrial/Independent (student). Personal interview. 10 March 2010.

Fierlinger, Paul (USA). Independent. Panel discussion. 9 Oct. 2009.

Foxgig, Nick (GTAAC/US, VI). Independent, Industrial, Emergent. Personal interview. 18 Nov. 2009.

Furniss, Maureen (California, VI, MC). Education (Professor & Animation Journal Editor) Independent, Emergent. Personal interview. 11 July 2009.

Gadassik, Alla (GTAAC, VI). Education (Western University PhD candidate), Emergent. Personal interview. 12 July 2009.

Gardner, Iain (UK/Scotland, VI, MC). Independent, Industrial, Education*. Personal Interview. 23 July 2010.

Ghazala Mohamed (Egypt, VI, MC). Education (Minia University Prof.), Independent (Director of ASIFA Egypt) , Industrial. Personal interview. 21 Mar. 2011.

Gouldstone, Iain (UK/Australia, VI). Independent, Industrial (Pachinko Pictures), Emergent. Personal interview. 17 Oct. 2009.

Gunn, Nathon (GTAAC, VI). Industrial (President of Bitcaster& Social Game Universe), Emergent, Independent*. Personal interview. 16 July 2010.

Helliker, John (GTAAC, VI, MC). Emergent (Dir. of Sheridan Screen Industry Research & Training), Education, Industrial*, Independent*. Personal Interview. Jan. 27 2011.

Hesler, Nicolas (GTAAC, VI). Education (Sheridan), Industrial*. Personal interview. 9 June 2010.

Hickner, Steve (USA, VI). Industrial (Dreamworks Director). Personal interview. 15 June 2009.

Hitchcox, Michael (GTAAC, VI, AI). Industrial, Independent (painter), Education (Sheridan). Personal interview. 22 Mar. 2010.

Holyoke, Mac (GTAAC, AI, MC). Industrial. Personal interview. 21 Feb 2010.

Hui, Gan Sheuo (Japan, AI, MC). Education (Kyoto Seika University Prof.). Personal interview. 20 Mar. 2011.

Huo, Brian (GTAAC). Industrial (Guru Studio). Personal interview. 5 July 2010.

Hunt, Paul (GTAAC, VI, MC). Industrial, Independent. Personal interview. 22 Apr. 2010.

Jenkins, Patrick (GTAAC). Independent, Education*. Personal interview. 16 June 2010.

Jones, Bob (GTAAC, VI). Emergent (Sheridan Visualization Design Institute), Education. Personal interview. 23 June 2010.

Jones, Mark (GTAAC, VI, MC). Educational (Seneca College Chair of Communication Arts), Industrial. Personal interview. 30 Sep. 2010

LaMontagna, Pasquale (GTAAC, VI). Independent, Industrial. Personal interview. 18 Nov. 2009.

Langer Mark (Canada, VI, MC). Education (Carleton University Prof.) Personal interview. 9 July 2009.

Linton, Aaron (GTAAC). Industrial (Guru Studio). Personal interview. 9 July 2010.

Lizzarda, Randolph (GTAAC, AI). Industrial/Independent (student). Personal interview. 19 Mar. 2010.

Lei, John (GTAAC, VI, MC). Industrial, Independent, Education*. Personal interview. 22 Apr. 2010.

Mayerson, Mark (GTAAC, VI, AI, MC). Education (Coordinator of Sheridan college BAA Animation Program), Independent, Industrial*. Personal interview. 2 Mar. 2010.

Marinchevska, Nadezhda (Bulgaria, AI, MC). Education (Academy of Sciences, Institute of Art Studies, Head of Screen Arts Department). Personal interview. 20 Mar. 2011.

McEvoy, Ben (GTAAC, VI, AI, MC)). Industrial, Emergent, Education (Seneca). Personal interview. 22 Apr. 2010.

Mohammadian, Maral (Canada, VI). Independent/Emergent (NFB Montreal, Production Manager for Stereo Lab), Industrial*. Personal interview. 24 Mar. 2010.

Moorshead, Jeremy S. (USA, AI, MC). Education (SCAD - Savannah, Chair of Animation Department). Personal interview. 21 Mar. 2011.

Morse, Lisa (Halifax, VI). Independent. Personal interview. 18 Nov. 2009.

Ng, Jon (Montreal/GTAAC, VI). Independent, Industrial, Education. Personal interview. 15 Apr. 2010.

Norris, Van (United Kingdom, VI, MC). Education (University of Pourtsmouth Prof.), Independent (film/music), Emergent. Personal interview. 11 July 2010.

Panagiotis, Rappas (Greece, AI, MC). Industrial. Personal interview. 21 Mar. 2011.

Parker, Barry (GTAAC, VI, MC). Education*, Industrial*, Independent*. Personal interview. 17 Sept. 2010.

Parry, Kevin (GTAAC, AI). Industrial/Independent (student). Personal interview. 19 Mar 2010.

Piller, Madi (GTAAC): Independent, Industrial*. Personal interview. 5 July. 2010.

Pindal, Kaj (GTAAC, VI, AI, MC). Education, Independent, Industrial*. Personal interview. 2 Mar. 2010.

Plimpton, Bill (USA, VI-2001, AI-2009). Indipendent, industrial*. Personal interview. Oct. 2001 & July 2009.

Quane, Victoria (GTAAC, VI). Industrial. Personal interview. 24 Feb. 2010.

Quenelle, Dave (GTAA, AI, MC). Education (Sheridan Prof.), Industrial*. Personal interview. 25 Sept. 2010.

Reeves, Richard (Calgary, VI). Independent, Education. Personal interview. 18 Nov. 2009.

Robinson, Chris (Ottawa, VI, MC). Independent (Artistic Director of the Ottawa International Animation Festival, Author). Personal interview. 19 Oct. 2009.

Rocha, Yuri (GTAAC, VI). Industrial (Guru Studio), Independent. Personal interview. 16 July 2010.

Schorr, Tara (GTAAC, AI, MC). Independent (TAIS Coordinator) Personal interview. 28 Sept. 2009.

Sherman, Joe (GTAAC, VI, MC). Industrial, Independent, Emergent. Personal interview. 12 Aug. 2010.

Shelleau, Maureen (GTAAC, AI, MC). Industrial, Independent, Education (Sheridan). Personal interview. 25 May 2010.

Simard, Élise (New Brunswick, VI). Independent. Personal interview. 17 Nov. 2009.

Smith, Clive (GTAAC, VI). Industrial, Independent, Emergent. Personal interview. 29 June 2010.

Sokol, Martin (GTAAC, AI). Industrial/Independent (student). Personal interview. 19 Mar. 2010.

Strom, Gunnar (Norway, VI, MC). Education (Volda University College Prof.), Emergent. Personal interview. 12 July 2009.

Stukator, Angela (GTAAC, AI, MC). Education (Assistant Dean of the Sheridan BAA Animation Program), Industrial* Personal interview. 17 Mar. 2011.

Surman, David (UK/Australia, VI). Education, Industrial (Pachinko Pictures), Emergent. Personal interview. 17 Oct. 2010.

Taylor, Barb (GTAAC, VI, MC). Independent (animation/live action), Industrial*. Personal interview. 1 Dec. 2009.

Temple, Adam (GTAAC, VI). Industrial (Elliott Animation), Independent*. Personal interview. 1 July 2010.

Tremblay, Frédérick (Canada, VI). Independent. Personal interview. 18 Oct 2009.

Tse, Kwan Ho (GTAAC, VI). Industrial (film), Independent. Personal interview. 13 Nov. 2009.

Veljovic, Aleks(GTAAC, VI). Industrial (Elliott Animation), Independent*. Personal interview. 1 July 2010.

Victor, Alexis (GTAAC, AI, MC). Industrial, Independent (Toronto Animation Live Organizer) Personal interview. 21 Apr. 2010.

Walsh, Thomas (United Kingdom, VI, MC). Education (Art University College at Bournemouth Prof.), Industrial*. Personal interview. 11 July 2009.

Ward Paul (United Kingdom, VI, MC). Education (Art University College at Bournemouth Prof.). Personal interview. 11 July 2009.

Wells, Paul (United Kingdom, AI, MC). Education (Loughborough University Prof.), Industrial, Independent (Author), Emergent. Personal interview. 12 July 2009.

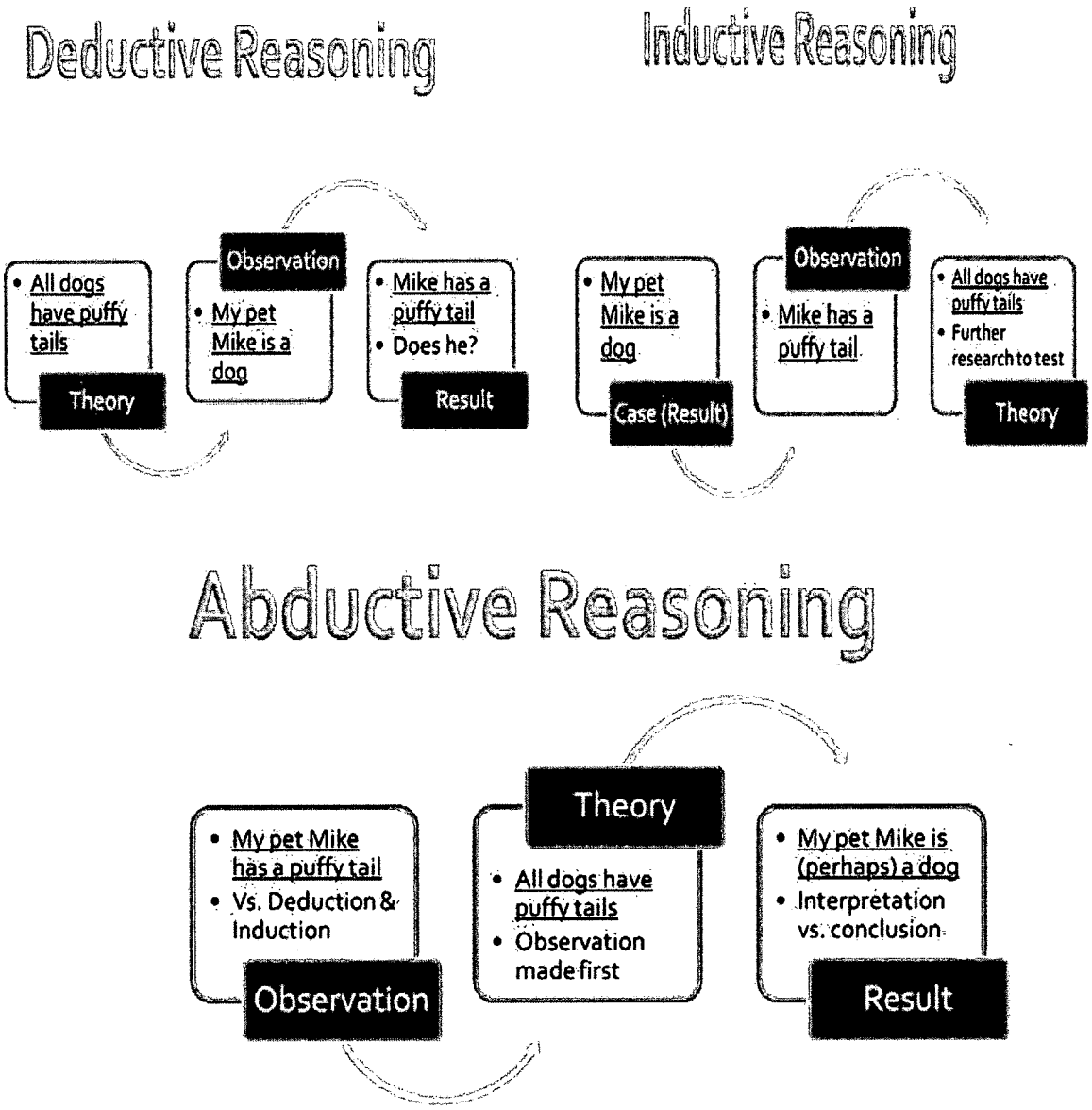
Weiss, Mike (GTAAC, VI). Industrial, Independent. Personal interview. 12 Aug. 2010.

Weinstein, Larry (GTA). Industrial/Independent (live action). Master class. 9 Nov 2009.

Wolloshen, Steven (Montreal, VI, MC). Independent, Education. Personal interview. 10 Nov. 2009.

White, Maury (GTAAC, MC). Education (Sheridan), Industrial*. Personal interview. 23 Oct. 2010.

Appendix C


Deductive Reasoning
All dogs have puffy tails
Theory
Observation
My pet Mike is a dog
Mike has a puffy tail
Does he?
Result
Inductive Reasoning
My pet Mike is a dog
Case (Result)
Observation
Mike has a puffy tail
All dogs have puffy tails
Further research to test
Theory
Abductive Reasoning
My pet Mike has a puffy tail
Vs. Deduction & Induction
Observation
Theory
All dogs have puffy tails
Observation made first
My pet Mike is (perhaps) a dog
Interpretation vs. conclusion
Result

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9. Dir. Shane Acker. 3D animation. Focus Features, 2009. Film.

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Anderson, Phil. Personal interview. 11 July 2009.

Ashworth, Willie. Personal interview. 12 Aug. 2010.

Avatar. Dir. James Cameron. Twentieth Century Pictures, 2009. Film.

Avni, Shira. Personal interview. 18 Oct. 2009.

Babar. Dir. Ray Jafelice. 2D animated series, 78 episodes. Nelvana, 1988-90. Film.

Babar: The Movie. Dir. Ray Jafelice. 2D animation. Nelvana, 1989. Film.

Babar and the Adventures of Babou. Dir. Mike Fallows. 3D animated series, 52 episodes. Nelvana, 2008-11. Film.

Beiman, Nancy. Personal interview. 17 Nov. 2009.

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Bob and Margaret. Dir. Dave Thomas. 2D animated series, 52 episodes. Nelvana, 1998-2001. Film.

Bolt. Dir. Byron Howard. 3D animation. Walt Disney Pictures, 2008. Film.

Brinkmann, Svend. "Could Interviews be Epistemic? An Alternative to Qualitative Opinion Polling." *Qualitative Inquiry.* 13.8 (2007): 1116-1138. Print.

Cars. Dir. Dir. John Lasseter. 3D animation. Disney/Pixar, 2006. Film.

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